The Bristol Medico-Chirurgical Journal.

"Scire est nescire, nisi id me
Scire alius sciret."

MARCH, 1908.

THE LONG FOX LECTURE:

THE FOURTH ANNUAL LECTURE ARRANGED BY THE COMMITTEE OF THE LONG FOX MEMORIAL, DELIVERED IN THE MEDICAL LIBRARY, UNIVERSITY COLLEGE, BRISTOL, ON JANUARY 16TH, 1908.

J. MICHELL CLARKE, M.D., F.R.C.P., *in the Chair.*

BY

PATRICK WATSON WILLIAMS, M.D. Lond.,

Lecturer on Diseases of the Nose and Throat, University College, Bristol;
Laryngologist and Rhinologist, Bristol Royal Infirmary.
Consulting Surgeon for Diseases of the Ear and Throat, Pontypool Hospital.

ON

SUPPURATIVE DISEASE IN THE NOSE AND EAR, WITH SPECIAL REFERENCE TO SOME NEWER METHODS OF TREATMENT.

THESE lectures were instituted to serve a two-fold purpose: firstly, to keep alive the memory of a physician who as a teacher of the art and science of medicine laboured in this Bristol Medical School long and well, whose illustrious example taught not alone what medical science had brought to the service of

man, but what the type of a true physician should be; and, secondly, to encourage and promote original thought and investigation in the many phases of what is comprised in the now comprehensive term science.

To be appointed one of those to weave this garland around the memory of Edward Long Fox is a privilege of which I am justly proud, and not less so because I am convinced that on this occasion it is a personal connection, rather than scientific merit, that has led to my being asked to add one laurel to the wreath.

More distinguished predecessors in this lectureship have expressed the high regard in which Long Fox was held by his medical contemporaries, but no one could have been in a better position than myself to feel the inspiration of his personality, or to realise the simplicity, deep sincerity, and warm, sympathetic nature that was here combined with perennial geniality and such a keen sense of humour. He did not scorn delights, though he lived laborious days. "Of every friendless name the friend," he combined a love for his work with a deep love for all men, and to the last devoted much time and work in the poorest parish in the city. His innate good sense and enviable power of expressing real sympathy made him not only widely loved in his professional as well as in his family life, but one to whom all instinctively turned in times of difficulty or sorrow.

> "As with us mortal men, the laden heart
> Is persecuted more, and fevered more,
> When it is nighing to the mournful house
> Where other hearts are sick of the same bruise."

He lived a simple life, generous to everyone but himself; cultured and scholarly, he instinctively abhorred anything in the nature of show. Of Fox it might truly be said—

> "When fainting nature called for aid,
> And hovering death prepared the blow,
> His vigorous remedy displayed
> The power of art without the show."

* * * * *

In no one department of medicine or surgery has there been greater and more rapid development of our knowledge of diseased

processes and methods of treatment than in diseases of the nose and ear, and though only one phase of diseases in this restricted field comes within the scope of this lecture, it is scarcely possible to enter fully into the symptoms and treatment, much less the many diagnostic methods employed in practice.

It is more particularly the comparatively new field of nasal accessory purulent discharges that I propose to discuss, dwelling especially on some features which are directly interesting in general practice, and on some newer methods of treatment, more particularly those methods which I have found most effective.

Before turning to other questions, it may be useful to recall some of the more important points in the clinical anatomy of the regions to be discussed.

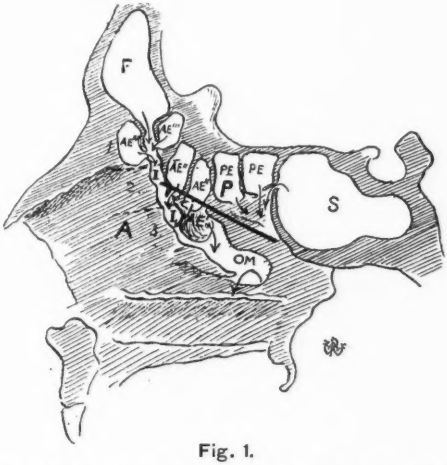


Fig. 1.

Diagram showing the arrangement of the nasal accessory sinuses, and their division into an anterior and posterior group by the line of insertion of the middle turbinated body.

For clinical purposes it is convenient to divide the accessory sinuses into two groups, viz. :—

(1) The anterior group, comprising those which open into the middle meatus, *i.e.* in front of and below the attachment of the middle turbinated body, viz. the

frontal sinus and anterior (and middle) ethmoid cells, and the maxillary antrum.

(2) The posterior group, comprising those which open into the superior meatus, *i.e.* behind and above the attachment of the middle turbinal, viz. the posterior ethmoid cells and the sphenoidal sinus.

Thus not only anatomically, but also clinically the ethmoid cells occupy a central and connecting relationship to the other nasal accessory sinuses. The ethmoid labyrinth is complicated by the frequency with which it develops irregularly, so as to encroach on these other cavities, and in the diagnosis of sinus suppuration it is essential that their anatomical arrangement should be understood.

The position of the labyrinth in the nasal cavity, and its relation to the orbit, the maxillary antrum, and the floor of the anterior cranial fossa, is well shown in the transverse section of the skull (Fig. 2).

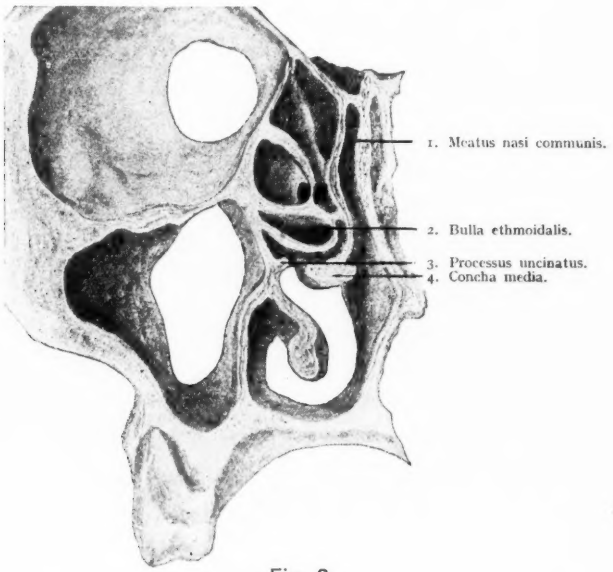


Fig. 2.

Frontal section showing right side of nose. Cross section through ethmoidal labyrinth (SHAMBAUGH).

If now we examine a sagittal section (Fig. 3), in which the middle turbinated body has been partially detached, we observe certain fairly constant partition plates which form prominences projecting towards the nasal passage, viz. :—

1. The plate of the uncinate process.
2. The plate of the bulla ethmoidalis.
3. The plate of the middle turbinated body (concha media).
4. The plate of the superior turbinated body (concha superior).
5. The plate of the fourth turbinated body (concha suprema). This is very frequently rudimentary.

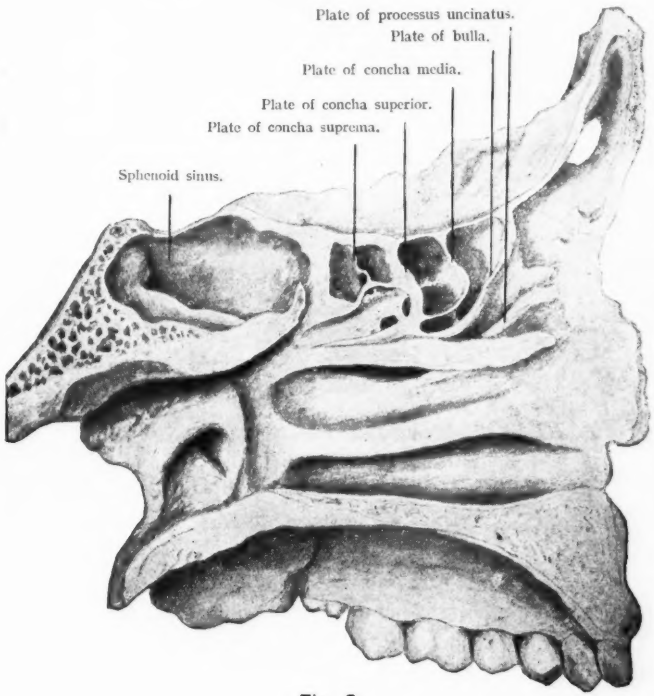


Fig. 3.

Sagittal section showing left side. Preparation shows typical construction of ethmoid labyrinth; the several partition plates presenting an unusually simple form (SHAMBAUGH).

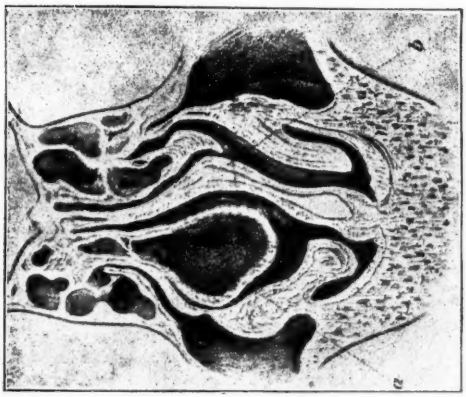


Fig. 5.

Transverse section showing a large middle turbinal cell (ROE).

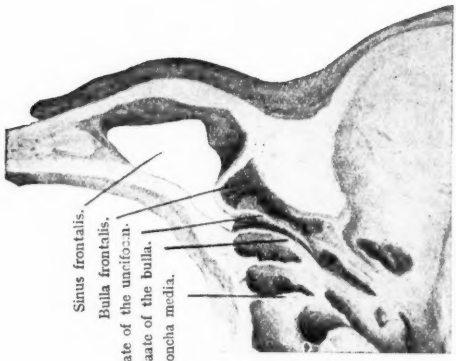


Fig. 4.

Sagittal section showing left side. The preparation shows an ethmoid cell has been developed below the uncinate plate, pushing this up into the frontal sinus, where a bulla frontalis is formed; the other plates of the ethmoid are formed as usual. (SHAMBAUGH).

Between these prominences are grooves in which the various cells and sinuses open; thus the groove between the uncinate process and ethmoid bulla is called the infundibulum, and the mouth of this groove is called the hiatus semilunaris.

Into this groove open the maxillary antrum, anterior or infundibular ethmoid cells, and, as a rule, the anterior end of the

groove opens into the frontal sinus; often, however, the groove ends blindly, dilating into an ethmoid cell which projects into the floor of the frontal sinus, and is then termed a bulla frontalis.

Between the second and third plates is another groove, the groove of the bulla, into which open the rest of the anterior, or as they are sometimes called, the middle ethmoid cells.

Between the third and fourth plates, *i.e.* in the superior meatus the posterior ethmoid cells open, and the sphenoidal sinus opens more posteriorly into this groove.

Sometimes a large ethmoid cell develops in the unciform process, forming a prominent agger nasi; again, a middle or

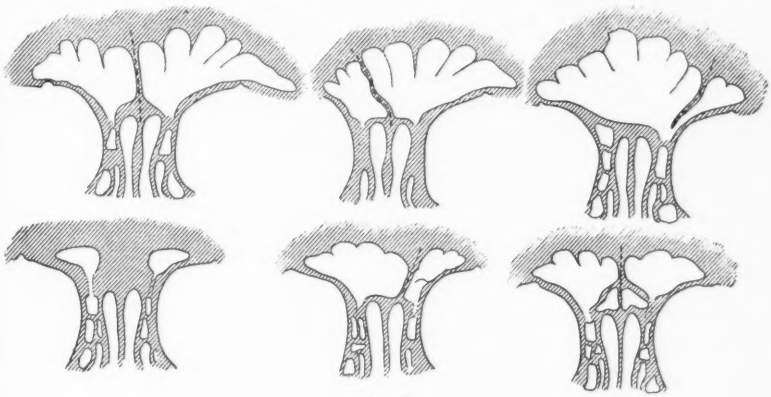


Fig. 6.

Diagrams showing various developmental irregularities of the frontal sinuses and their relations to the roof of the nasal passages.

posterior ethmoid cell or cells may develop forwards so as to encroach on the frontal sinus, or come to lie between the orbital roof and the floor of the anterior cranial fossa (supra-orbital ethmoidal cells); or, again, an ethmoid cell may develop backwards so as to lie over the sphenoidal sinus, giving the condition described as double sphenoidal sinus. Again, by the development of a large ethmoid cell in the anterior end of the middle turbinated body a cystic enlargement may be produced there, known as a concha bullosa.

Thus great irregularity of the ethmoid cells arises, such irregular

development being at the expense of the other sinuses, and is liable to cause difficulties in diagnosis and in operative treatment.

It is mainly due to the irregular development of the frontal sinuses, and their relationship to the ethmoidal cells, that difficulty arises in the course of operation.

It will be seen (*a*) that pus discharging from any of the anterior group will appear in the middle meatus *beneath the middle turbinated body*, and that it will tend to pass towards the anterior nasal orifice, especially on stooping forwards. Again (*b*), pus coming from any of the posterior group must appear above the middle turbinal, that is, in the olfactory fissure: further, it enters the nasal passage far back, and will tend to pass backwards into the naso-pharynx, being guided in this direction by the shape and direction of the middle turbinated body. Hence pus coming from this group, the sphenoidal sinus and posterior ethmoidal cells, can often be observed in the choanæ, by posterior rhinoscopy, appearing above the posterior end of the middle turbinated body.

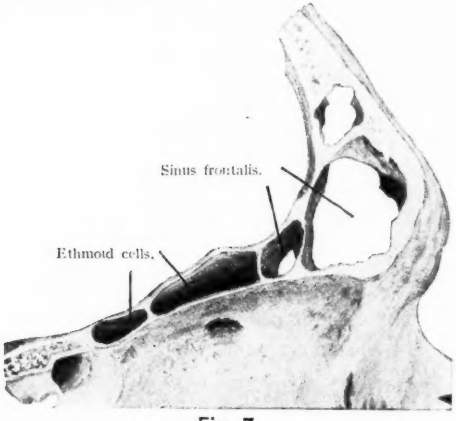


Fig. 7.

Frontal section through the right orbit, showing frontal sinus and ethmoid cells which have developed out over the orbit. The latter if suppurating would complicate an operation for frontal sinusitis unless specially sought for and opened up (SHAMBAUGH)

Reference to anatomical preparations further makes it clear that empyema of the sphenoidal sinus and posterior ethmoidal cells must tend to be associated with one or more of the

neighbouring cavities So, too, it is inevitable that if the frontal sinus is secreting pus the anterior ethmoidal cells must very usually become involved, while pus from any of these upper cells, opening as they do into the infundibulum and hiatus semilunaris, often in part enters the opening of the maxillary antrum, causing secondary empyema there.

Again, from the relative position of the various cavities and their opening into the nasal passages, we see it follows that if a maxillary antrum contains pus, so long as the patient stands upright, it will not overflow into the nose till the pus rises up to the level of the opening in the middle meatus, and then will

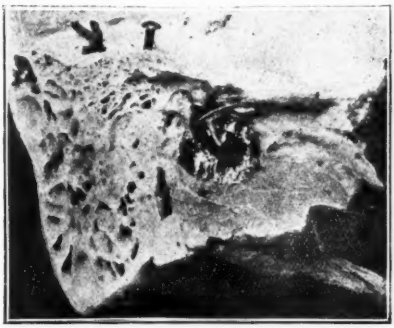


Fig. 8.

Section of the left temporal, showing the tympanum from the inside, the iter ad antrum and the mastoid antrum and cells. In front, i.e. to the right, is seen the canal for the Eustachian tube.

constantly discharge; but on stooping low or turning the head to the opposite side, the pus will flow freely from the full antrum, so that patients complain of pus dripping from the nose on stooping or running on to the pillow at night if they lie on one side.

Moreover, the antrum can hardly empty itself; consequently the pus gets infected with saprophytic organisms and stinks, causing a subjective foul odour or taste, cacosmia or cacogeusia.

As the frontal sinus opening is the lowest point of the cavity, the pus tends to collect during the night when the patient is lying down; but provided the outlet is not closed, it begins running out soon after rising, and continues running freely for an

hour or two till the cavity has emptied, and then it comes away gradually in small quantities.

In pure ethmodial suppuration the pus is constantly running, but generally in small amount; although when the ethmoid cells are over-developed, it will be realised that the secretion may be as copious as from any of the larger sinuses.

In these nasal accessory sinuses, as in the mastoid antrum, connected as it is with the tympanic cavity through the *iter ad antrum*, we have one feature common to all alike, they are bony cavities lined with mucous membrane, all potentially open and exposed to infection from the respiratory tract, all having small apertures of exit tending to cause retention of infective secretions with consequent formation of pus. The symptoms arising in every case depend essentially on such retention, and while owing to variations in anatomical relationship the signs and symptoms differ, the same essential surgical principle applies to the methods adopted for their cure, viz. free drainage.

SYMPTOMS OF CHRONIC SUPPURATION IN THE ACCESSORY SINUSES.

In drawing attention to some of the more important symptoms, it is convenient and instructive to group the symptoms from the clinical standpoint, rather than the anatomical, under the following heads:—

(*a*) **Nervous symptoms.** *Neuralgia and headache.*—The most constant symptom is periodic headache, due to accumulation of secretion in a cavity causing pressure and irritation of the sensory nerves, until the increasing pressure forces an exit for the purulent mucus through the natural ostium, narrowed and closed by the swelling of the lining mucosa: relief following the escape of pus, until with its re-accumulation the headache returns and the process is repeated. The commonest seat of pain is the supra-orbital region, the vertex or the occiput, and often it does not correspond to the particular cavity involved, being a referred pain. Thus antral empyema very usually causes headache in any one or all of these regions, and I would particularly emphasise the fact that simple occipital headache may be due to antral disease.

Neuralgia due to frontal sinus disease is usually supra-orbital, and often there is marked tenderness on deep pressure at the upper internal angle of the orbital roof. The symptoms in their character and periodicity, particularly in unilateral sinusitis, are often suggestive of migraine, and in many patients an erroneous diagnosis of migraine has been made until the import of an associated nasal discharge came to be recognised.

In sphenoidal sinus empyema the pain is often deep and very severe, and yet its situation difficult to describe, the headache being accompanied by a marked feeling of mental confusion, and sometimes patients say they feel as if they must go out of their mind. But there is one symptom which is very misleading—pain in the ear. It is not often present, even in sphenoidal sinus disease ; but if it is the only pain the patient experiences, the seat of trouble is liable to be completely overlooked.

Last summer I was asked by Dr. H. Willcox to see a lad aged 12, in consultation, for acute pain in the right ear, with slight febrile disturbance and photophobia. It had lasted a day or two, and the symptoms suggested acute middle ear disease. But the membrana was normal, and there was entire absence of any tenderness over the mastoid, or other indications of aural trouble. On examining the nose, there was some slight rhinitis, and the previous history seemed to point to a mild influenza attack. I came to the conclusion that he had recent sphenoidal sinusitis and gave a very guarded prognosis, notwithstanding the absence of alarming symptoms, for the boy had not felt ill enough to be in bed.

We decided on a course of local inhalations, sedative sprays containing cocaine and suprenine, with the hope of causing the sinus to evacuate itself, his condition at that time not being sufficiently urgent to warrant opening the sphenoidal sinus, a procedure which is very difficult and dangerous in so young a child with undeveloped sphenoidal sinuses. Not improving, he was seen by Dr. Arthur Cheatle, who decided that, at any rate, there was nothing calling for aural operation. After a further interval, when the headache had become general, and the child was only semi-conscious, Sir Victor Horsley saw him, and then diagnosed "influenzal cerebrospinal meningitis." At the *post-mortem* examination an accumulation of pus was found around the right cavernous sinus. There is good reason to believe that influenza infected the sphenoidal sinus, causing sphenoidal sinusitis and pain in the ear, and that the infection spread through the

lymphatic channels and the subarachnoid space surrounding the cavernous sinus, and hence spread throughout the subarachnoid space.

Tilley had a case of sphenoidal sinus disease in which severe pain in the ear had led a surgeon to advise a radical mastoid operation. He was able to reproduce the intense aural pain by pressure in the sphenoidal sinus with a cotton wool probe. Two other cases of sphenoidal sinus suppuration with severe pain in the ear are referred to by St. Clair Thomson, and in both competent surgeons were induced to open the mastoid to no purpose.

All patients suffering from purulent sinusitis are liable to suffer from general toxæmic symptoms, toxic products reaching the blood either from direct absorption from the implicated sinuses or from the gastro-intestinal tract. But lymphatic absorption of toxic matters, in the presence of channels of communication with the intracranial venous sinuses, must be held to account for the profound mental depression and difficulty in thinking clearly, almost amounting to slow cerebration, that is very frequently present in fronto-ethmoidal or spheno-ethmoidal sinus suppuration, and sometimes, to a less marked degree, even in simple maxillary sinus disease. Many patients have come with drawn, sad expression and sallow complexion, expressing their weariness of life and a profound melancholia which was quite foreign to their natural state of mind, symptoms which have completely disappeared with the removal of their sinus disease. Sometimes it has been difficult to recognise in the round-faced, cheerful individual one who shortly before treatment was a haggard melancholic.

I have never met with a case where definite mental aberration preceded and was relieved by accessory sinus treatment, but they are by no means unknown. Stucky[1] relates a series of cases coming under his own observation where definite mental symptoms and suicidal tendencies in many of them were completely cured by operations on the sinuses.

From extension of sphenoidal sinus infection especially, but also from frontal and ethmoidal suppurations, such unfortunate

[1] *Med. Rec.*, 1906, lxx. 820.

complications as cavernous sinus and petrosal sinus thrombosis, subdural and intradural abscess, suppurative meningitis, brain abscess, erosion of the carotid and other endo-cranial vessels, have been known to arise, and Schech reports a case in which in addition there was glycosuria with polyuria.

Fig. 9.

One of the author's cases of sphenoidal sinus suppuration, with cavernous sinus thrombosis and consequent exophthalmos.

Paroxysmal sneezing, rhinorrhœa and asthma, are among the other more frequent neuroses set up by accessory sinus disease.

I will refer to the first-mentioned, paroxysmal sneezing and rhinorrhœa, only to emphasise the fact that in the earlier stages of ethmoidal suppuration, when there may be nothing to observe on examination but a tumid redness and a fulness of the middle turbinal body, these symptoms, which are generally pure neuroses, may be really due to a chronic inflammatory infective lesion, which if unattended to will eventuate in the formation of polypi, and not unlikely with extension of the suppurative

process to the other sinuses. I venture to touch on the relationship of spasmodic asthma to nasal suppuration, although it is too large a question to deal with at all fully. But I have had such conclusive evidence in cases under my own observation that true spasmodic asthma may be due to suppurative nasal disease, as to leave me in no doubt of their interdependence. Since the classical case recorded by Voltolini, where the removal of a nasal polypus cured long-standing asthma, the question of nasal polypus being a cause of asthma has long been a hotly-debated subject. The very large percentage of patients with large nasal polypi who do not suffer from asthma, and the very large percentage of true asthmatics in whom no nasal polypi can be found, tend to prove fairly conclusively that there is no direct connection between nasal polypus and asthma as cause and effect. The nasal abnormalities which are frequently associated with asthma are œdematous swelling on the middle turbinals, a general œdematous infiltration of the Schneiderian membrane, septal deformities causing more or less obstruction, and in young children adenoid growths. Such conditions are causes of intra-nasal excitation, and similar conditions result from infective inflammations in the accessory cavities, which, while eventuating in many cases in the formation of polypi, are also efficient peripheral causes of asthma in those with unstable nerve centres; afferent impulses from these are as influencing the bulbar respiratory centres, and through them the efferent nerves to the bronchioles.

Bronchial asthma is probably an exaggeration of bronchiolar contraction and dilation in expiration and inspiration, which probably occurs normally, just as the alæ nasi and the glottic opening dilate with deep inspiration to contract with expiration. Evidence in support of this I have discussed at length elsewhere,[1] and I may point out that Cajal has demonstrated in the bulb of a mouse that a few of the collateral fibres from the gelatinous substance of Rolando (the receptive nucleus of the fifth nerve) break up under the motor nuclei of the facial and vagus, and the inference is that they communicate. That being the case, we have an explanation of

[1] Watson Williams.

the influence of the sensory areas of the fifth nerve, especially of the nasal mucosa, on certain regions in the motor territory of the vagus.

(*b*) **Ocular Symptoms.**—That displacement of an eye, with consequent strabismus, may result from distension of an accessory sinus in closed empyema has long been a matter of common knowledge. Thus a frontal sinus empyema or mucocele may displace the eye downwards and outwards; distension of ethmoid cells with protrusion of the orbital plate displaces the eye outwards. These gross displacements of the eye are rare, but many other ocular symptoms are much more frequently attributable to sinus suppuration than is generally recognised. With either antral empyema, frontal or sphenoidal sinus suppuration, blurred vision, a tendency to lachrymation and conjunctival injection of the corresponding eye are often noticed by patients on reading or doing fine work. A moderate degree of œdema of the eyelids is frequently seen even in early cases of fronto-ethmoidal sinusitis, especially in the upper eyelid and on the nasal side. These are probably due to vaso-motor disturbances from irritation of the sympathetic branches connected with the ganglia associated with the fifth nerve. Posey[1] draws attention to the non-inflammatory nature of this simple œdema, which is to be distinguished from inflammatory thickening of the lid in cellulitis. Another class of cases described by Posey are those designated "pre-lachrymal abscess," the term by which he refers to the swelling which sometimes forms above the internal palpebral ligament, and somewhat external to the lachrymal sac. These pre-lachrymal abscesses, which are sometimes mistaken for abscess of the sac itself, are often due to necrosis of the lachrymo-ethmoidal cells, or to a frontal sinus suppuration pointing here.

Again, moderate degrees of neuritis, Posey finds, may frequently be diagnosed by the distension of the lymph sheaths of the retinal vessels, and objectively by a diminution of a light sense, and a sense of fulness in the eye, with pain on rotation.

Dragging pain at the back of the eyeball is a usual symptom in sphenoidal sinus disease. St. Clair Thomson, who collected

[1] *Med. Rec.*, 1907, lxxii. 255.

forty-two cases of sphenoidal sinus suppuration with cerebral and ophthalmic complications, considers that "perhaps the only pain which is characteristic of sphenoidal sinus disease is when the patient states that it is deep in behind the eyes. It may be so intense as to cause insomnia."

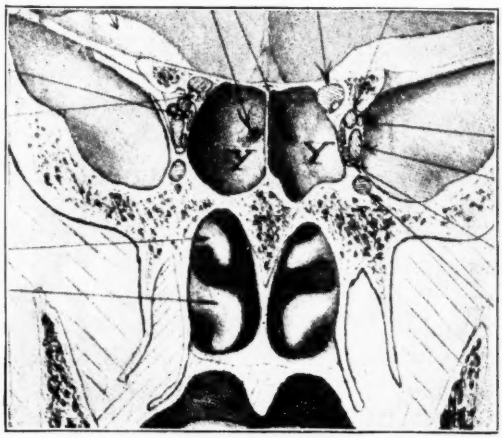


Fig. 10.

Frozen section of the sphenoidal sinuses and its anatomical relations (HOLMES).

It is not until the intra-cranial extension of the infection and inflammation supervenes that the various nerves in and around the cavernous sinus, and in close proximity to the roof or below the sinus, give definite indications of being involved.

From the position of the optic chiasma and nerves, the nerves passing through the cavernous sinus, and the close proximity of the superior maxillary nerve and of its branches to Meckel's ganglion, we can readily understand that congestion of the retinal

veins, papillary stasis, œdema, atrophy and chemosis, paralysis of the ocular muscles, with consequent ptosis, strasbimus, unilateral and bilateral temporal hemianopsia, and eventually cavernous sinus phlebitis and thrombosis or abscess, and exophthalmos are liable to ensue. Vision may be good or visual fields contracted, or complete amaurosis may arise gradually or even suddenly, from thrombosis of the retinal vein. Panophthalmitis and destruction of the eyeball has been observed; but apart from such unfortunate complications, the failure to recognise the interdependence of the ocular manifestations to accessory sinus disease has led to unnecessary enucleations of the eyeball. Fish[1] refers to several such instances coming under his notice.

It is remarkable, however, that definite external muscle paralysis may arise without other ocular symptoms. Thus Bryan[2] relates a case of sphenoidal sinus disease in which there was paralysis of both external recti but no other changes, and no pain in the eye. I have spoken of these graver ocular lesions as being due to sphenoidal sinus disease, but they may one and all equally be caused by posterior ethmoidal cell suppuration, for Onodi has shown that these cells are not seldom in direct relation with the cavernous sinus and the optic nerve or optic chiasma.

It is worthy of note too, as demonstrated by Onodi,[3] that the sphenoidal sinus, or the posterior ethmoid cells of *one side*, may be in direct relationship with the optic nerve canal, or optic chiasma, of *both sides*, being separated by a shell of bone as thin as paper; and thus one may explain cases where one-sided ethmoidal or sphenoidal empyema has caused blindness or other ocular disturbances on the *opposite* or healthy side of the nose.

Skin affections are practically limited to the nose, but are worthy of consideration. So-called recurrent erysipelas is sometimes due to ethmoid cell suppuration, and in other cases less definite attacks of recurrent œdematous inflammation arise, and the tissues of the upper lip and nose may become chronically infiltrated and thickened. The nasal symptoms may be slight

[1] *Med. Rec.*, 1906, lxx. 689.
[2] *J. Am. M. Ass.*, 1899, xxxiii. 1197.
[3] *Trans. of the Congress of Ophthalmology*, Heidelberg, 1906.

or obvious enough on examination, but in a few cases I have observed the nasal secretion to be muco-purulent.

In one case a young girl completely recovered after operations on the ethmoid region and the maxillary antra (Fig. 11); and in another (Fig. 12), a boy, treatment by anti-streptococcal serum injections was suggested but refused.

Fig. 11.

Nasal hypertrophy due to nasal accessory sinus suppuration.

Fig. 12.

Recurrent inflammatory œdema of lips due to purulent nasal disease.

Another patient still under my care suffered for many years from his nose, which persisted in getting red and swollen, and despite all abstemious habits and quiet life, it was a constant and perpetual source of annoyance and humiliation to him The lower half of the nose was doughy, with uneven surface, with fine venules coursing over it.

"NASAL MUCOUS POLYPUS"

What is the connection between the so-called "nasal mucous polypus" and nasal suppuration? Firstly, the common mucous polypus of the nose is not a myxoma, but is a localised œdematous fibroma, being composed of fine meshes of areolar tissue, filled with fluid containing serum albumin with a trace of mucin, and it is covered with the ciliated epithelium of the mucous membrane while small, although this normal covering is often lost and

replaced by stratified epithelium as the polypus becomes larger. Various theories have been propounded from time to time to explain the origin of polypi, but none appeared to me to accord with the clinical facts. Writing in 1891,[1] I therefore advanced the view that probably obstruction arises in the lymphatic vessels, owing to the invasion of micro-organisms.

On Plate I., Figs. 3 and 4, I show microscopical sections, prepared by Prof. Walker Hall for me, from a patient operated on for nasal polypi and antral and ethmoidal suppuration. Gram-negative and Gram-positive small granules are seen forming aggregations in masses around a nucleus, and some strings of isolated granules are also observable. It seems probable that these masses are mast cells which very rarely occur in polypi. I think the origin of some polypi is as follows. The pathogenetic cocci invade the epithelium, enter the lymphatic spaces, and are carried to the small lymphatic vessels in which, with or without consequent endo-lymphangitis, they cause blocking of the lymphatics. The blood vascular supply remains unaltered, and the very active secreting functions of the affected mucosa persist, while the fluid poured into the lymphatic spaces fails to be removed, and accumulates in that implicated area. If this occurs close to the surface, a corresponding elevation of the epithelium is seen to protrude; if deeper in the mucosa, a pale area of œdematous connective tissue arises. In either case, as the accumulation increases, the area corresponding to the blocked lymphatic steadily increases till a minute polyp begins to protrude, and becomes a small mucous polypus. If the supply of infecting material ceases, the arrested lymphatic circulation may re-establish itself and the polyp may disappear; but if the lymphatic vessel is permanently blocked, the polyp continues to grow till it may attain enormous proportions. Inasmuch as the area involved for any particular polyp, as far as the surface of the mucous membrane is concerned, is the restricted territory of the involved lymphatics, the polyp, however large, has a relatively narrow pedicle of origin. Such polypi form in the mucous membrane

[1] *Diseases of the Nose, Pharynx, and Larynx*, 4th Ed., p. 325.

of the outer wall of the nose, above the inferior turbinal, and in all the accessory sinuses.

As nasal polypi arise in this manner, they are always more or less pedunculated when of any considerable size, and hence are usually best removed by picking them off at their attachment instead of cutting through the body of the polyps by a snare (Fig. 13).

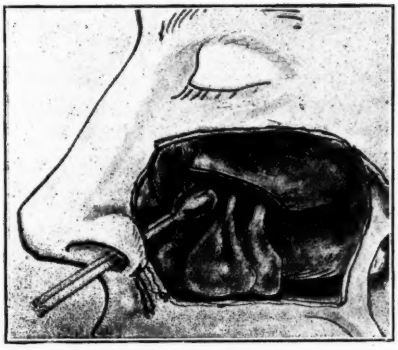


Fig. 13.

The Author's forceps shown in situ removing polypi at their narrow base.

The presence of multiple polypi in the nose is strong evidence of the existence of suppuration in one or more of the accessory sinuses, and it is not difficult to understand that infective pathological processes such as I have described may afford sufficient peripheral irritation to set up not paroxysmal sneezing only, but the more troublesome neurosis, paroxysmal asthma.

I have only sketched in the briefest manner possible what I consider is the usual infective origin of nasal polypus, reserving for a future occasion any reference to the many other points that demand consideration, such as the differences between single and multiple polypi, the relationship of bone changes to those observed in the mucosa, why polypus is usually associated with ethmoid cell disease, the nature of aural polypi, and so forth.

PLATE I.

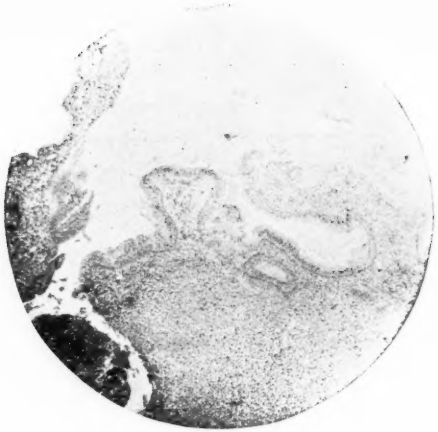


Fig. 1.

Photo-micrograph of section showing a projecting localised œdematous infiltration with a distinct pedicle, i.e. a commencing polyp (1 inch obj.).

Fig. 2.

Section showing (in centre) area of marked cell infiltration surrounded by œdematous area (1 inch obj.).

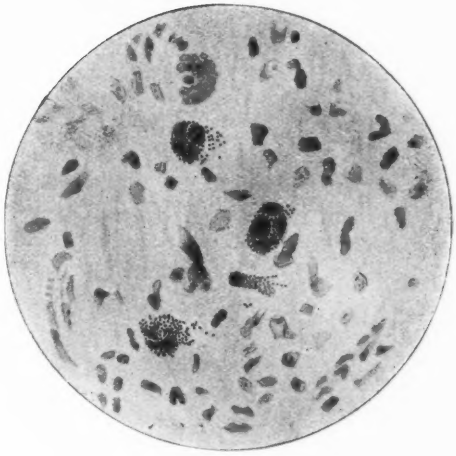


Fig 3.

Section of œdematous polyp showing small masses of Gram-negative granules. Thionin stain. (*Obj.* $\frac{1}{16}$.)

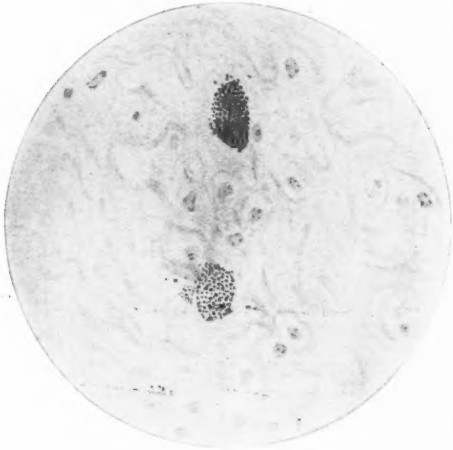


Fig. 4.

Section of œdematous polyp, showing small masses of Gram-negative and Gram-positive granules Gram stain. (*Obj.* $\frac{1}{16}$.)

TREATMENT.

Before referring in any detail to the question of treatment, I desire first to emphasise two points of cardinal importance: firstly, that our standpoint should not be too local; and, secondly, that in acute or chronic suppuration of the nose or ear, general surgical principles of free exit to the pus, and free drainage, must be our guiding principle, an axiom that scarcely needs elaboration.

Consideration of local conditions of suppuration in the nose does not alone suffice for successful treatment of tuberculous or syphilitic disease or chronic diphtheria of the nasal passages, but the importance of general treatment is less recognised when the accessory sinuses are implicated. But here, too, a tuberculous or syphilitic infection, for instance, may baffle every effort to effect a cure by local methods alone. One case in particular I call to mind, that of a medical man who came to me from India on account of a persistent frontal sinus empyema. The symptoms seemed to date from the time when he had malarial fever, and remembering that chronic synovitis of a joint may be caused by malaria, I put him on a course of quinine, with unexpected and remarkable success, for apparently the undoubted sinus trouble subsided and disappeared.

In acute accessory sinus inflammation there is no need for special treatment, unless as a consequence of the swelling of the inflamed mucous membrane the openings into the nose become blocked, and the profuse secretion retained. The frontal headache and noseache of a simple acute catarrh, and of influenza, measles, &c., is due to acute inflammation of the lining mucous membrane of the accessory sinuses, but when these become intensely acute and localised, it is due to retention of the secretion. In such conditions temporary relief is obtained by hot fomentation externally, while a fine spray of adrenalin and cocaine, or of menthol and cocaine, directed well up the nasal passage may cause the mucosa of the ostia to shrink sufficiently to allow the muco-pus to escape. Ten drops of a saturated solution of menthol in rectified spirit added to a pint of hot water, and the steam inhaled through the nose, may have the same beneficial effect.

Again, the use of suction by Sondermann's suction mask applied over the nose may induce the apertures to open.

Failing relief in this manner, or even when the affected sinus secretions do periodically escape, the danger of an acute sinusitis becoming chronic should be borne in mind, and if such an accessible cavity as the maxillary antrum be the seat of trouble, it is much better to make a small opening through the alveolus or canine fossa, so as to allow the cavity to be irrigated daily till it becomes healthy.

TREATMENT BY OPSONIC VACCINES.

In chronic open suppuration from the accessory sinuses, the fact that it has become chronic indicates a deeper lying and more persistent infective process than when it is an acute stage, but even here, with free exit to the discharge, the infected mucosa may regain its normal condition. The same applies to purulent otitis media, the essentially different condition being that there is practically no normal exit, and nature or art has to make one through the tympanic membrane, and we often have to aid the exit of the secretions by intra-tympanic irrigations or by removing the outer attic wall.

But we have at our disposal a method which is still on its trial, but from which it is reasonable to hope we may derive great assistance in obviating the necessity of radical operations.

I have resorted to vaccine treatment in cases of frontal sinus and ethmoidal cell suppuration, and in chronic purulent otitis media.

My first case I was attending in conjunction with Dr. Bruce Kelly of Burnham, a patient with one-sided antral and fronto-ethmoidal suppuration. A radical antral operation with partial removal of the middle turbinated body was performed with very satisfactory results as far as the antrum was concerned. Frequent irrigation of the frontal sinus had considerably improved matters there, but the purulent discharge continued to be copious and gave no indications of clearing up. In April we sent a specimen of the pus from the frontal sinus to Dr. Munro of Bath, and the results of his cultures and of the injections of vaccines were as follows :—

April 7th, 1907.—Staphylococcus in pure culture in pus drawn from frontal sinus. Tubercle bacillus not found. O.I. to staphylococcus 0.81. O.I. to tubercle bacillus 1.06.

April 17th.—First injection of vaccine. (100 millions staphylococcus.)

April 24th.—O.I. 1.15.

April 27th.—100 millions staphylococcus injected.

May 3rd.—O.I. 1.03.

May 4th.—Injection of 100 millions.

May 11th.—Injection of 100 millions.

May 19th.—O.I. 0.8. Large increase in amount of discharge and pain. Patient weak and ill. Acute exacerbation.

May 19th.—Injection of 100 millions.

May 29th.—Injection of 200 millions.

June 9th.—O.I. 1.5. Injection of 500 millions staphylococcus. Discharge much less. Patient feeling much stronger, very little pain.

June 19th.—Injection of 500 millions. Continues to have very little discharge or pain, and feels very well.

July 7th.—O.I. 0.95. Injection of 100 millions. Having a good deal of pus down the throat. Slight exacerbation.

July 17th.—500 millions injection. Much less discharge.

July 28th.—Injection of 500 millions.

Aug. 9th.—Injection of 500 millions O.I. 1.2. Patient feeling well, very little discharge.

Aug. 29th.—Injection of 500 millions.

Sept. 15th.—Injection of 500 millions. Not feeling so well, getting thinner, culminated in an acute exacerbation on September 23rd with great pain and much discharge. Sinus washed out on September 30th. No more pain. Discharge gradually got less.

Oct. 7th.—Injection of 200 millions only, it having been found that 500 millions produced invariably a

negative phase with increased pain and discharge lasting about a week.

Oct. 21st.—Injection of 200 millions O.I. 0.8. Patient then went to Channel Islands, and there has not been an injection since.

In January, 1908, Dr. Kelly reported that the patient says the headaches are getting much less, that they are not so violent when they come, that she does not have the "cotton-woolly" feeling now, and that she feels better, locally and generally, than she has done for a long time—perhaps years past.

One case in which resort to this method was apparently of great service was that of Mrs. R., aged 36, who had chronic purulent otitis, with perforation of Shrapnel's membrane, as well as a large opening in front of the handle of the malleus. Removal of the attic wall and frequent irrigations had improved, but failed to cure. There was no direct evidence of any necrosis of the ossicles or tympanic wall, but it was fairly certain that the mastoid antrum was the source of suppuration.

Mrs. R.—Colonies of staphylococcus pyogenes aureus and albus were isolated from the ear discharge. From each of these growths a separate vaccine was made on July 6th and standardised. These were mixed and injections given, commencing with 250 millions.

July 25th.—O.I. No. 1 organism 0.8. No. 2 organism 1.47.

After four injections the opsonic index to each organism was taken on October 8th, 1907.

No. 1.—O.I. to own staphylococcus aureus 0.58.

No. 2.—O.I. to own staphylococcus albus 0.60.

They were almost identical, but still low. She was then completely free from all aural suppuration, and has remained so.

In another case where, following a Delasaeux radical operation on the frontal sinus, some purulent discharge continued for a lengthy period, the culture from the pus proved to be unmixed streptococcus brevis. A first injection of the vaccine, of 20 millions, was given. This was followed by diminution, and finally by disappearance, of all discharge without any further

treatment. Unfortunately, no indices were taken before and after the vaccine injection.

In another case of frontal sinus suppuration I was not able to trace any improvement from the vaccines. How far the improvement in these cases is attributable to the vaccines it is as yet unsafe to say, but, at any rate, the results were sufficient to encourage resort to the method in certain cases. I think that probably smaller injections more frequently repeated would give better results and avoid long negative phases.

MAXILLARY ANTRUM SUPPURATION.

When the diagnosis of antral suppuration has been made, we have to decide on the question of operation: shall it be a simple trephining of the alveolus through the canine fossa, or entry through the inferior meatus by the nasal route, so as to allow a daily washing out of the antrum; or must a radical operation be performed?

Undoubtedly many cases of not too long standing may be cured by the simple operation, followed by irrigation. If teeth corresponding to the floor of the implicated antrum have been lost, or one is so decayed as to warrant its extraction, the alveolar route has certain advantages, the chief of which is that it is easy to perform I know of no alveolar method that can take precedence of Mr. Ackland's.

By his instrument, a hole is bored into the antrum, and with the introducer, a very ingeniously-devised tube with a retaining screw-thread which retains it in position, is readily screwed home. It has a split pin stopper, which the patient can remove to attach the well-fitting syringe nozzle, and when the irrigation is completed the patient can himself replace the stopper so as to keep out any food or saliva from the mouth.

Usually I prefer opening with a quarter-inch trephine through the canine fossa, preceded by incision in the mucous membrane and reflection of the periosteum over the area to be trephined. It can be done under gas anæsthesia. I have had self-retaining antral rubber plugs made, and one of these is slipped into the hole. Either then, or a day or two later, the antral cavity is

inspected by means of a good light thrown in through an antral inspecting tube, a method elaborated by Kelly, of Glasgow. Every part of the inner wall and roof can be seen, and, in fact, portions of the other walls. The amount of thickening of the lining membrane, the existence of polypoid degeneration, and especially the condition of the antral mucosa about the unciform process and middle turbinal region, can be accurately observed, and one can often determine how far a good result from simple irrigation is possible, or whether nothing short of a partial curettement of the antrum, or even a partial removal of the inner wall, is a *sine qua non*. Otherwise the patient may have to go on washing out the antrum daily for some months in a futile hope that a radical operation can be avoided.

To make an aperture in the inferior meatus such as will enable the patient to irrigate the antrum is certainly much more difficult, and when it has been accomplished one cannot inspect the inner wall of the antrum at all, and the other less important parts of the cavity can only be very imperfectly inspected. Of late this intra-nasal route has been advocated, or may I say its advocacy has been revived, for John Hunter was the first advocate, although he proposed entry through the middle meatal wall.

If this route be selected, we have at our disposal various trephines, short strong angular knives, or cutting forceps.

I formerly used a cutting forceps of my own pattern, which was efficient as a means of entering the antrum and cutting a hole that sufficed for irrigation. My colleague, Mr T. Carwardine, has introduced a very ingenious set of cutting forceps, by means of which the opening made in the outer nasal wall can be gradually enlarged by clipping away the bone wall upwards, backwards, downwards and forwards, so as to make an opening well down to the floor of the nasal passage.

I know of no *intra-nasal* method which can compare with this operation of Carwardine's, for the amount to be removed is completely under the control of the operator, while the irregularity of the margins of the opening is certainly not any greater than when a hammer and chisel are used in the usual way through the canine fossa in the Ogston-Luc operation.

My later method, however, appears to me to possess advantages which outweigh all that can be urged in favour of the nasal route. I simply trephine a sixpenny-sized opening in the canine fossa, exactly in the same way as the small trephine opening is made for inspection and irrigation. The trephine, made for me by Mayer and Meltzer, has a special gimlet-like pin, so that the

Fig. 14.

The author's operation on the maxillary antrum, slightly reduced.

Fig 15.

To show the relative size of the permanent opening after healing.

circle of bone is retained within the trephine. Every part of the cavity is readily and accurately inspected, and one can at once see how much of the lining mucosa must be curetted and how much of the inner wall must be removed. Often one can thus avoid doing anything like a complete radical operation, while at the same time ensuring the complete removal of all polypi and diseased areas of bone, which is essential to successful results. The same trephine is then passed through the opening in the canine fossa till it is pressed against the portion in the anterior part of the lower meatus which is to be removed. The tip of the forefinger

of the free hand is passed into the nose, so that the septum is protected as the trephine cuts through into the nasal passage. In this way *a perfectly round opening with smooth edges* is made to connect the anterior and lowermost part of the antral cavity with the nose flush with its floor, no matter how thick the bony wall is at that point. The disc of bone and the corresponding piece of the inferior turbinal comes away in the trephine. It is a relatively easy operation, and ensures the least possible removal of healthy tissue ; in fact, after the parts have healed, it is often very difficult by simple inspection of the nasal passage to see that anything has been done.

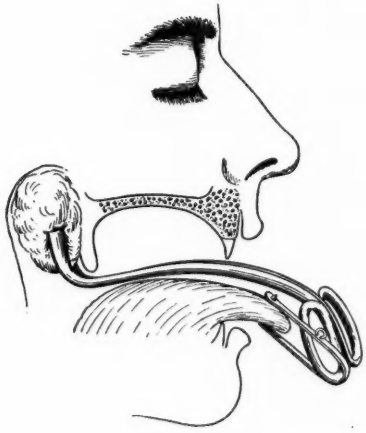


Fig. 16.

The author's post-nasal plug and tongue-hook for operations in the nose.

The ½-inch opening gets smaller when the edges epithelialise over, but it never closes ; whereas a smaller trephine opening contracts, and sometimes closes altogether.

The opening into the mouth quickly closes, and after the first dressing all irrigation is carried out through the nose. One of the worst cases I have had to do lately—a double radical antral operation with complete curettement of polypoid antral mucosa, and very extensive removal of the ethmoid cells and polypi

and the unciform region—was out for a walk on the tenth day, and was trying his hand at golf on the fourteenth.

In cases requiring radical operation there is not infrequently greater pain and swelling and general febrile disturbance, with quite a minor procedure, than with the much more extensive radical operation. This particular patient came to me for nasal obstruction, and though I carefully examined him for accessory sinus disease, I could not satisfy myself of its existence ; for not only was there none to be seen at the time of examination, but he assured me he never had pus or discharge from the nose anteriorly or posteriorly. The antra transilluminated well, although there was no pupil reflex. When I operated on the deflected septum by submucous resection, I also clipped away a rather full, boggy anterior end of the left middle turbinal. The nasal obstruction was removed, but the following day the left upper and lower eyelid was œdematous. On examining the nasal passages, a quantity of pus could be seen in the middle meatus on either side, and in the upper ethmoidal region. The orbital cellulitis culminated in an orbital abscess, which was opened by Dr. Ogilvy. The patient was three weeks in the home, and he remembered afterwards that he used to be frequently swallowing or hawking up purulent and bad-tasting matter. The fact is that in the course of years he had grown so used to it that he did not notice it, and on account of the nasal obstruction all the pus had gone down the naso-pharynx. Yet when, very shortly afterwards, he returned to the home and had the extensive operation he was up and out in ten days.

When I reflect how on several occasions I have nearly missed detecting an accessory sinus empyema when examining a nose, I can only urge that oftentimes the patient's perceptions seem so blunted that the history given seems hardly compatible with the actual state of affairs.

A very striking example of similarly misleading symptoms and signs in aural troubles occurred to me some time ago, when I was asked to see, in consultation, a lady in Paignton, aged 56. Amongst other troubles, she had had purulent discharge from the right ear, off and on, since girlhood, and a few days previously had complained of pain in the ear, with slight rise of temperature.

The day before I saw her she had been suffering great pain, especially in the front of the meatus, but also all over the right temporal region. This had been relieved by morphine, and had subsided, but the pain in the meatal region remained fairly acute. She was quite clear and even fairly bright when I saw her, and had no headache. The question arose as to whether an abscess in the anterior meatal wall accounted for the pain and febrile disturbance. There was no headache, the optic discs were normal, except that the retinal veins were doubtfully full. There was no redness, œdema, or tenderness over the mastoid, and very firm pressure over the antrum only elicited the expression, "Oh, how nice; it gives a sense of relief." I confess I felt that the symptoms rather pointed to an intra-meatal abscess, as the meatal wall was swollen and red, especially posteriorly, but an incision showed that no collection of pus was there. She had been prepared for opening the mastoid, and an ordinary radical mastoid operation was performed, a large antrum full of stinking pus being cleared out, together with the mastoid cells. There was nothing abnormal about the emissary vein, in the absence of all grosser signs one of the surest indications of septic lateral sinus. But having completed the operation, careful search was made for any patch of softened bone, and at the roof of the antrum the searcher passed into the cranial cavity, and a large quantity of fœtid pus streamed out. The opening was enlarged so as to allow very free drainage of the subdural abscess. Everything went well, and she improved in every way till the third day, when I heard by telephone that the temperature and headaches had returned, and the patient showed other indications of intracranial mischief. I suggested that fine, blunt-pointed forceps should be introduced in the direction of the temporo-sphenoidal lobe, and when it had entered 1½ inches a quantity of pus escaped. Although for a short time the evacuation of this temporo-sphenoidal abscess was followed by improvement, the patient never rallied. There can be no manner of doubt that, despite the remarkable absence of symptoms, this patient's mastoid suppuration had set up a latent subdural and temporo-sphenoidal abscess, and that she was getting about in her usual way at a time when there was no suspicion of any such grave condition existing.

FRONTAL SINUS SUPPURATION.

Irrigation of a suppurating frontal sinus may sometimes succeed in curing the condition, and is usually worthy of trial, not because it is likely to be successful, but because the radical operation is dangerous, and one can never tell beforehand how much deformity may result, or how many complicating factors may be revealed only after the operation is begun. There is very

good reason why irrigation is rarely successful, in that the frontal sinus, often as it is the seat of inflammatory disease and suppuration, generally drains and cures spontaneously, owing to the favourable position of the fronto-nasal channel for drainage, *unless anatomical conditions make this impossible.* Thus, if the anatomical conditions permit of irrigation, the occurrence of chronic sinusitis is relatively rare, and where, with a fairly patent fronto-nasal duct, natural drainage has failed to prevent the sinusitis becoming chronic, it is usually due to pathological conditions which will render irrigation futile. Nevertheless, irrigation may succeed, and I have had completely successful results in more than one case.

Radical Operation.—The design of the modern radical operation is to remove the whole of the diseased tissues of the frontal sinus, and the fronto-ethmoid cells, to secure free drainage into the nasal passages, and to obliterate the frontal sinus with as little disfigurement as possible. The radical operation has been widely practised, and the results justify its adoption in all cases calling for interference when conservative methods have failed to give sufficient relief. The earlier radical operation left such great deformity, that in this country at any rate it was never received with favour, except as a last resort. To Killian, of Freiburg, belongs the credit of initiating the cardinal point in the modern operation, viz. the *preservation of the supra-orbital bony margin,* by which the facial defect is lessened to a very great extent, so as to be even trivial in favourable cases.

The essential features in Killian's operation are shown in the plate, No. II. He saves the supra-orbital margin of bone, and the bridge extending to the root of the nasal bone, but removes the whole of the rest of the anterior wall of the sinus *and the floor,* making a free opening into the nasal cavity by removing the portion of the bony wall below the bridge and in front of the lachrymal groove, and clearing away diseased ethmoid cells even when necessary right back to the sphenoidal sinus.

At the edge of the nasal bone perforate the nasal membrane with a pointed scalpel. By means of a probe-pointed scalpel, continue the incision upward and backwards ½ c.m. below the

lamina cribosa, then downwards. This flap of nasal membrane is turned outwards, and is used to cover those parts of the wounds facing the nasal cavity. A wide communication between nasal cavity and frontal sinus is permanently secured.

Killian then allows the soft tissues of the supra-orbital flap to sink back against the posterior wall of the sinus, and the orbital fat bulges up to complete the closure of the gap left by removal of the sinus. He leaves the inner third of the wound unstitched, and packs the cavity through it till it is closed by granulation.

In Great Britain Tilley adopts a modified Killian's procedure, whereby he has been enabled to greatly shorten the subsequent stages of healing. He does not remove the floor of the sinus forming the orbital roof, except so far as to make a free passage into the nose and remove all implicated ethmoidal cells; but having, like Killian, removed all the diseased mucous membrane of the sinus, cleared away all septa that could interfere with drainage, and followed up and cleared away any small pocket that contains pus, he sews up the external wound at once.

Delsaux has devised a modification of Moure's operation for the removal of malignant growths of the ethmoid, which he resorts to for the radical treatment of multiple sinus suppuration involving the frontal sinus, the ethmoid cells, maxillary antrum, &c. An incision extending down to the bone is made, extending from the centre of the brow along the internal angle of the orbit, descending on the lateral face of the nose till it reaches and terminates at the corresponding naso-labial depression. The periosteum is divided and detached upwards and downwards. Then the soft tissues over the frontal bone are detached, and the frontal sinus is opened with a gouge through the floor close to the nasal spine. The whole or part of the inferior and anterior walls of the frontal sinus are removed, according to the necessities of the case. The nasal bone and the ascending process of the superior maxillary bone are now removed, without at this stage opening through the nasal mucosa, so that the blood will not encumber the nasal passages. Of the anterior and middle ethmoidal cells sufficient are removed to ensure good drainage from the frontal

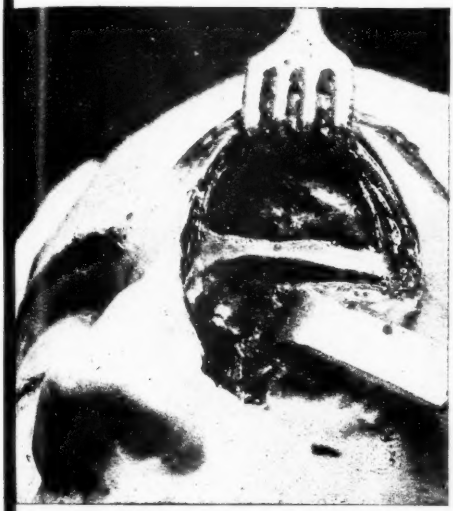


Fig. 1.

Killian's radical fronto-ethmoidal sinus operation, showing the bridge.

Fig. 2.

Author's case. Operation on the ethmoidal cells, which were cleared away right back to the sphenoidal sinus, which was opened. Operation on right side, as in the Killian operation. The frontal sinus did not exist.

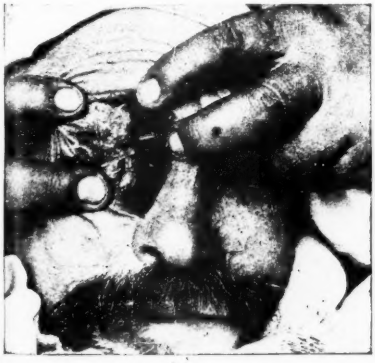


Fig. 3.

Delsaux's operation after removal of the frontal sinus wall and of the ethmoidal cells.

Fig. 4.

Delsaux's operation finished, showing line of incision.

sinus, and if the ethmoid is diseased that is extirpated too, care being taken to avoid wounding the ethmoidal vessels.

Behind one sees the sphenoidal sinus aperture. If its condition is doubtful this is explored, and if necessary the anterior wall removed. Unless previously removed, one now takes away with cutting forceps the middle turbinated body, and attacks the anterior, superior and inner angle of the antrum of Highmore, and the interior of the antrum is curetted.

Lastly, the nose is pressed back in its place, and one proceeds to suture the divided tissues carefully.

Delsaux has operated thus several times with excellent results, and "very little, if any, deformity." He has operated on two bilateral cases, and then he does not take away the nasal bones, so that, although the operation is less easy, one avoids the deformity that must result if both nasal bones are removed.

The Author's Method.—For the radical operation involving the frontal sinus, ethmoidal cells, sphenoidal cells, sphenoidal sinus—as, for instance, in pansinusitis—or in extensive operations on the frontal sinus and fronto-ethmoidal regions for the removal of malignant neoplasms, I have resorted to an osteoplastic operation, which gives very free access to the ethmoidal cells and sphenoidal sinus, as well as to the frontal sinus, and yet avoids the destruction of the nasal bone, and, above all, does not leave a depressed pit below the bridge, for no bridge is made.

The method requires an initial incision extending along the eyebrow towards the root of the nose, thence downwards just outside along the middle line. The skin and soft tissues and the periosteum are raised over the anterior surface of the frontal sinus, the size of which can be determined beforehand by skiagraphy, and the anterior wall of the sinus completely removed to within 3 or 4 mm. of the floor. After removing as much of the floor as seems called for, a second incision, about ¾ in. long, along the inner and lower margin of the orbit exposes the lachrymal groove, the duct is then turned outwards, and, with a chisel or burr, entrance is made into the nasal passage. A fine saw, having been passed through the nose so as to come out at this opening, is made to divide the nasal process of the

maxillary bone, a second saw-cut being made, extending from the frontal sinus down to the lachrymal groove, dividing the bone from behind forwards, and leaving the soft tissues intact. By making the saw-cut from below through the nasal process of the superior maxillary bone, the facial artery is not divided, and thus the main vascular supply to the flap is not cut off. The first incision is then completed by means of a saw, extending right through into the fronto-nasal duct, and downwards so as to divide the nasal bone *near* the mid-line, but outside the attachment of the septum. The osteoplastic flap is then turned out, giving free access to the fronto-nasal passage and ethmoid cells, which can readily be removed and cleared away if necessary

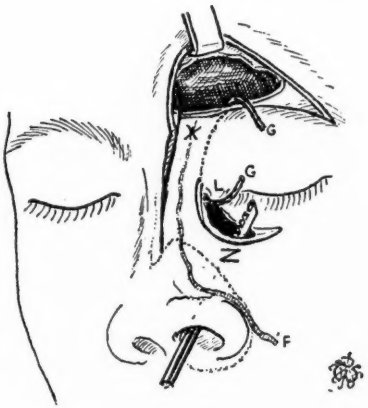


Fig. 17.

Diagram of the author's radical operation for frontal-sinus and ethmoidal cell suppuration with an osteo-plastic flap.

X *Indicates the osteo-plastic flap which is turned back after the nasal saw has divided* **Z**, *the nasal process of the superior maxillary bone, and* **G**, *the Gigli saw has divided the bone along the dotted line, in each case from within outwards.* **F**, *the course of the facial artery, showing how it escapes division and thus secures good vascular supply to the flap.*

right back to and including the sphenoidal sinus. The whole of the pyogenic mucous membrane of the frontal sinus, if it is a case of empyema, is then curetted away and any ridges removed.

PLATE III.

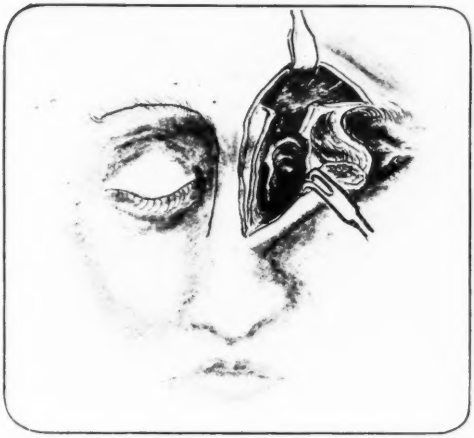


Fig. 1.

The Author's radical frontal sinus operation, with osteo-plastic flap.

Fig. 2.

Case of radical fronto-ethmoidal sinus operation on the left side, two weeks after operation by the Author's osteo-plastic method. From an untouched negative.

Fig. 3.

Case of radical fronto-ethmoidal sinus operation on the right side, six weeks after operation by the Author's osteo-plastic method. From an untouched negative.

The osteoplastic flap is finally replaced and the incisions sutured. In this way it is possible to get a very free access to the dangerous upper ethmoidal region, as well as to the sphenoidal sinus, if necessary.

The mucous membrane of the fronto-nasal duct should be saved, and that on the inner side of the flap be turned back into position with the flap.

After removal of the whole of the mucous membrane of the frontal sinus I have sometimes found it possible to obliterate the cavity by carefully packing it with antiseptic paraffin or wax.

SPHENOIDAL AND POSTERIOR ETHMOIDAL CELL SUPPURATION.

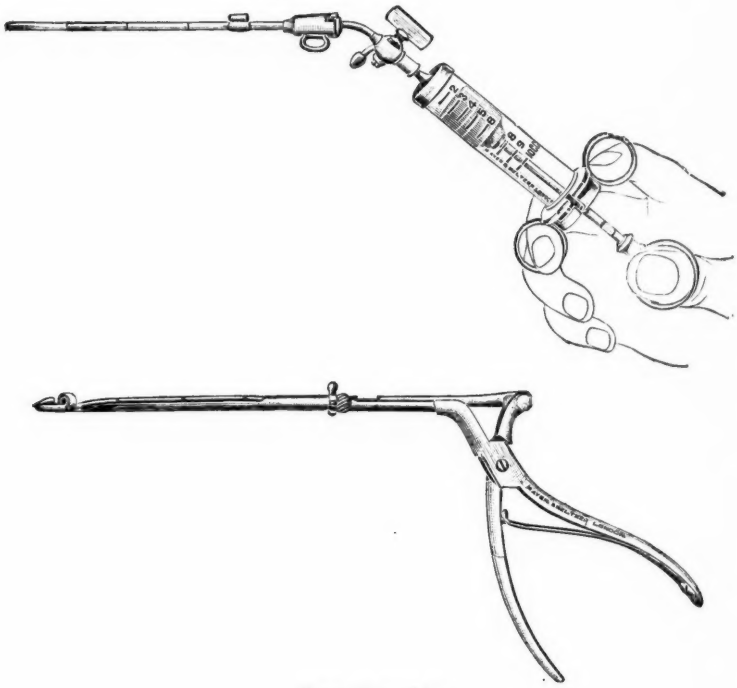
The posterior group of sinuses, viz. the sphenoidal sinus and the posterior ethmoid cells, offer much difficulty in differential diagnosis, these cavities and their openings into the nose being so close together in the spheno-ethmoidal fissure, far back and high up in the nasal passage, while very often they are all implicated together.

The best plan is to determine first the condition of the sphenoidal sinus, for if either it or the ethmoidal cells contain pus, and the sphenoidal sinus can be excluded, it follows that the ethmoidal cells alone are diseased.

In some few cases it is possible to see the sphenoidal sinus opening through the nasal passage, and then pus may be seen pouring out of the opening, and fresh pus re-appearing as soon as it is wiped away. In a large number a fine cannula can be passed through the opening and the sinus washed out, particularly if the middle turbinal be partially ablated. But, apart from the fact that in most patients such partial turbinectomy is essential before entrance through the natural opening is possible, and thus in the event of a healthy sinus being found an unnecessary operation on the turbinated body is performed, it is not easy to be sure that the fluid escaping from the nose has not become contaminated with muco-pus after its exit from the sphenoidal sinus.

On account of these difficulties and sources of error, I have

devised a plan by which the existence of pus in a sphenoidal sinus can be determined with comparative ease and certainty, and I think, providing due care and skill are used, with safety.



Figs. 18 and 19.

The author's sphenoidal sinus cannula and exploring syringe and the sphenoidal sinus cutting forceps.

Under either local or general anæsthesia, the patient lying on the back, the fairly fine cannula, with a blunt trocar, is passed through the thin anterior wall of the sinus in the following manner.

The blunt trocar and cannula is passed along the floor of the nose till it impinges against the posterior pharyngeal wall; then the distal end is carried forward along the roof of the naso-

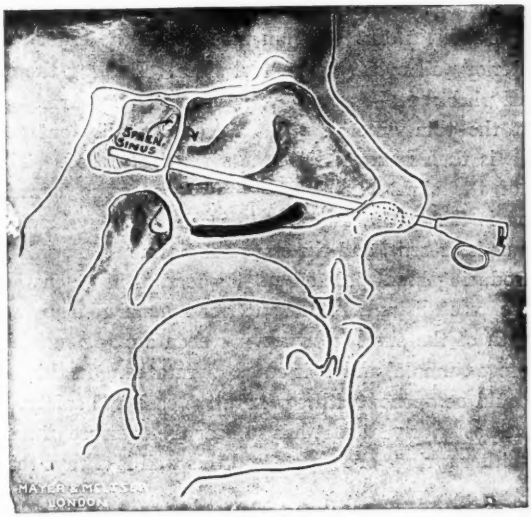


Fig. 20.

The author's sphenoidal sinus exploring cannula in situ.

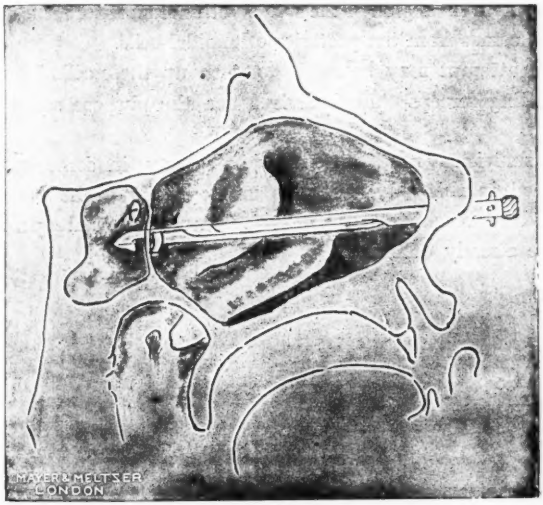


Fig. 21.

The author's sphenoidal sinus cutting forceps in situ.

pharynx till it slips up the anterior wall. In this way one gets the point about a quarter of an inch above the lower border of the anterior wall of the sphenoidal sinus. Holding the cannula as nearly horizontal as feasible, it is gently but firmly pressed against the thin anterior wall, which it readily enters. The cannula is then removed and the syringe attached. The contents of the sinus are then aspirated, or some boracic acid solution is thrown in, and sucked up into the syringe.

If pus is present, and the sinus has been opened, this is done by introducing blunt-pointed cutting forceps in much the same way, the exact distance of the anterior sphenoidal sinus wall and the depth of the sinus itself having been already measured by the syringe cannula, and as it cuts it is rotated. In this way the sinus could be opened with comparative ease and safety, as it is only the posterior wall that has to bear the pressure of the blunt end of either syringe or forceps, and this wall is always thick and strong.

It is easy to wash out the sinus, if it does contain pus and the anterior wall has been opened, and then if pus still quickly reappears in the region of the spheno-ethmoidal fissure it is certain that it comes from the posterior ethmoidal cells.

An attempt may be made to open up these cells by means of cutting forceps that I devised for the purpose some years ago.

A sufficiently free exit for drainage may in some cases be obtained in this way, but this method failing, the only sure method of reaching these cells is by the external operations I have already described.

TYPHOID FEVER AND TYPHOID CARRIERS.

BY

D. S. DAVIES, M.D.,

Medical Officer of Health, Bristol,

AND

I. WALKER HALL, M.D.,

Professor of Pathology, University College, Bristol;
Pathologist to the Royal Infirmary.

TYPHOID fever has shown in England and Wales, during the three and a half decades that have elapsed since it was distinguished in the Registrar-General's returns from typhus fever, a continuously decreasing *mortality* :—

PERIODS.	DEATH RATE PER MILLION LIVING.
1871—1880	322
1881—1890	198
1891—1900	174
1901—1905	110

While the *mortality* has decreased, however, the *fatality* (or case-mortality) has remained practically stationary. Thus, in the London Fever Hospital in 1848—1857 the fatality rate was 17.3 per cent., in the Metropolitan Asylums Board Hospitals in 1871—1897 the rate was again 17.3 per cent., and in the single year 1897 it was 18.7 per cent.

Upon the discovery of the bacillus of typhoid fever in the eighties, it was anticipated that control of the disease would become simple ; the causal bacilli were supposed to enter, occupy, and leave the body as an orderly army, leaving no stragglers, and

recovery of the patient was held invariably to connote the death and disappearance of the bacilli.

If this were always so, the control of such a disease would be comparatively simple, and the knowledge that the typhoid organism is a flagellate water-living parasite leaving the body by way of the solid or liquid excretions during the clinical continuance of the disease, and completing its life history by a more or less prolonged saprophytic existence in organically polluted soil, or in water, pending its introduction into the intestinal tract of its next host, would sufficiently explain the etiology of the disease in its well-known phases as water-borne, milk-borne, oyster-carried, and so on.

But allowing for the fulfilment of these conditions in the majority of instances, there still occurred a residuum of cases which did not fall into line with these routine conditions, and fuller knowledge of the life history of the causal parasite has become necessary in order to account for such aberrant outbreaks.

That the major portion of the decline in the prevalence of typhoid fever has been due to general improvement in drainage and water supply is probably, in view of the nature of the disease, incontrovertible, and this obvious relationship has tended to obscure the validity of personal transference (mediate or immediate) of infection.

The easy habit has unfortunately arisen of referring obscure sporadic outbreaks of typhoid fever to general insanitary conditions, and the smoke test has no doubt led to the reconstruction of much innocent drainage, and to an outlay which might have been better expended.

Two things, however, became in the course of time apparent: one that, owing to enhanced resistance to infection in certain individuals, attacks in such partly-immune persons might be represented by very slight or negligible symptoms, so that neither the patient nor his friends, nor even his medical attendant would have reason to suspect the real nature of his illness. Hence arise "ambulant" cases and "missed" cases, affording far greater opportunities for the distribution of infection owing to ignorance of any need for, and consequent lack of, precautions; the other,

that after apparent recovery, some of the bacterial diseases may persist in the patient, who, himself immune, may become a "carrier" of the disease, and be potentially infective towards others.

The occasional persistence of the Bacillus Typhosus in the human body over long periods has been recognised for some years, and the possibility of this condition forming the explanation of obscure outbreaks was suggested by Horton Smith in his Goulstonian Lectures in 1900. At that time it was generally accepted that the Bacillus Typhosus could be demonstrated in the stools, if care was taken, during the first and second and early part of the third week of the disease, and possibly also during the early part of the relapse. Later, it could not be demonstrated by the laboratory methods then available.

It was known, however, from the experiments of Chiari[1] that the bile in the gall-bladder contains the typhoid bacillus in the majority of cases, and often in pure culture.

It was naturally supposed at first that, as the fever passed away, and as health returned, the bacillus, the cause of the disease, would disappear from the tissues also, and this was demonstrated to be the case in some of the earliest observations.

But the experiments of Blackstein and Welch[2] showed that, sometimes at least, the typhoid bacillus might remain for much longer periods; experimentally, in rabbits, it was found in the bile 128 days after the date of inoculation, and this suggested that the same thing might occur in man.

Between 1894 and 1896, Buschke[3], Sultan[4], and Bruni[5] quoted cases in which the bacilli were found in the pus from bone abscesses, in two instances six years after the primary fever, and in one case seven years after.

Hunner[6] quotes cases in which cholecystitis was shown to be accompanied by the presence of the Bacillus Typhosus in pure

[1] *Ztschr. f. Heilk.*, 1894, xv. 199.
[2] *Johns Hopkins Hosp. Bull.*, 1891, ii. 96, 121.
[3] *Fortschr. d. Med.*, 1894, p. 572.
[4] *Deutsche med. Wchnschr.*, 1894, p. 34.
[5] *Ann. de l'Inst. Pasteur*, 1896, x. 220.
[6] *Arb. a. d. k. Gsndhtsamte.*, 1895, p. 207.

culture; in one case three months after the fever, in another eight months, and in a third after an interval of seven years. The most remarkable case of all, however, and one very carefully tested, is that recorded by Von Dungern[1], in which fourteen and a half years after the attack of typhoid fever the bacilli were still present in pure culture in the cystic contents.

These facts, detailed by Horton Smith, and insisted upon by him as possible sources of re-infection, have remained largely ignored in their epidemiological relationship, partly because the assumed rarity of their occurrence suggested that they were merely bacteriological curiosities, and partly because the isolation of the Bacillus Typhosus from the fæces was at that time not only difficult, but very uncertain.

In 1906, however, owing to the continued prevalence of sporadic typhoid in South Germany, the subject was taken up with the advantage of modern and more certain laboratory methods, and Klinger[2] found that persons in apparent health can harbour typhoid bacilli and excrete them in the stools or urine.

The German observers divide "carriers" into two classes:—

1. "Acute carriers," who have shown no symptoms, but after being in direct contact with patients may carry and excrete bacilli for a short time and in small numbers.

2. "Chronic carriers," who have a short, or a long, time before gone through a regular attack of typhoid, and may excrete for months, or years, more or less pure cultures of typhoid bacilli.

The "chronic carriers" are obviously the most dangerous class. About 4 per cent. of typhoid patients appear to become carriers; the condition is most common in women, and the bacilli, in all probability, are harboured in the bile in the gall-bladder, or even in the intra-hepatic biliary passages, or hepatic focal necroses, whence intermittently they are discharged and excreted with the fæces. This condition may persist for as long as ten years, possibly longer. When these chronic carriers are engaged in the preparation of food, or in dairy work, they are apt to give rise to intermittent local outbreaks of typhoid fever,

[1] *München. med. Wchnschr.*, 1897, xliv. 699.
[2] *Arb. a. d. k. Gsndhtsamte.*, 1906, xxiv. 91.

probably by contamination of the food with the hand after defæcation or micturition.

Kayser[1] quotes the case of a proprietress of a Strasburg bakehouse who prepared the meals for the employés, and states that each journeyman developed typhoid soon after arrival. Examination of her stools yielded cultures of typhoid bacilli, and her blood gave a distinct Widal reaction (1—100).

Soper,[2] of New York, records the case of a cook who in five years lived in four families, and gave rise to twenty-eight cases. The bowel discharges furnished practically pure cultures of the typhoid bacillus; the extrusion of bacilli was intermittent.

A. and J. C. G. Ledingham[3] record thirty-one cases in fourteen years at an institution, finally traced to carrier cases.

At a home for inebriates near Bristol, containing 240 inmates, a succession of twenty-eight cases of typhoid fever occurred intermittently between November, 1906, and November, 1907, and caused two deaths. The introduction of the first case could not be explained, but transference of the infection was obviously by milk, which, moreover, became infected *after* sterilisation.

It was supposed that rats, having access to the dairy and food stores from the drains, conveyed the infection, but when these premises were made rat proof the outbreak still went on.

Finally, suspicion fell upon a woman employed in the kitchen and dairy work during the whole time of the outbreak, who had suffered from a severe attack of typhoid fever in 1901. She was excluded from kitchen and dairy work and isolated, and no further cases occurred except one, twelve days after her isolation commenced, and so within the incubation period.

This patient was apparently in perfect health; her blood agglutinated a laboratory strain of bacillus typhosus in low dilutions, and her fæces, when examined on two occasions in November, 1907, appeared to be perfectly normal. But on December 20th, after slight abdominal pain, she passed a loose light stool, not unlike an early typhoid stool, and from this stool typhoid bacilli were recovered in considerable quantities.

[1] *Ibid.*, 176. [2] *Med. Rec.*, 1907, lxxvi. 818.
[3] *Brit. M. J.*, 1908, i. 15.

It was subsequently discovered that this same woman had been cook at an institution for children at a time when, in 1904, twenty-five out of the fifty inmates developed typhoid fever at intervals within five months.

The cases quoted sufficiently indicate the "efficiency" of a "typhoid carrier" as a source of infection, and forcibly suggest the necessity, in any outbreak, for inquiring into "personal" as well as "local" possibilities of infection.

The recorded outbreaks present many points of similarity; the cases occur in groups at uncertain intervals, for the bacilli are extruded intermittently. The effective carrier is usually, or always, employed in food preparation; if she also handles the milk supply the opportunities for infection are greatest, and the percentage of attacks is large. Institutions where a number of persons spend a considerable time, and receive food which passes through the same person's hands, offer the most striking and most easily studied examples of this method of infection.

Prophylaxis.—The stated percentage (4 per cent.) of convalescents who become carriers is considered by Savage[1] and others to be probably understated; but it must be admitted that only a few seem to achieve distinction, which may be due to variation in habits of cleanliness.

It would be difficult to enforce the rule that every typhoid convalescent should prove the dejecta to be free from the Bacillus Typhosus for three months, before being regarded as other than a suspected "carrier." Still, such a precaution would probably minimise the occurrence of sporadic outbreaks, and the resulting saving in sickness and mortality would repay the tedious routine.

In any case, the admission of typhoid convalescents to institutions and private homes must be considered seriously.

Stringent regulations can readily be made and enforced, with proper discipline, in institutions, especially with regard to the absolute necessity for the adequate cleansing of the hands after micturition and defæcation, of all persons engaged in kitchen or dairy work, carriers or not, before handling food; and care

[1] Savage, "Recent Work upon the Bacteriology of Typhoid Fever," *Pub. Health*, 1907, xx. 12.

should certainly be taken, by inquiry into the history of past illnesses, to avoid the appointment of persons who may be "carriers" of typhoid to the position of cook or dairymaid.

If persons are known to be "carriers" they must, of course, be excluded from all dealings with food preparation, and frequent changing and disinfection of the underlinen, care in the cleansing of the hands and other obvious precautions should be enforced.

Treatment.—From the standpoint of treatment the "chronic carrier" provides an intricate problem. To remove the typhoid bacilli from the intestine does not appear to be a difficult task when the lists of purgatives learned in one's earlier days come up for revision. But how to dislodge them from the gall-bladder or the liver is, as yet, an unsolved question. The surgeon may remove the gall-bladder, when permitted, but even he would scarcely dare to excise the liver. The failure of the ordinary intestinal antiseptics in these cases is a pronounced one, and the result of experiment must be waited for in patience.

It is possible that the treatment of the convalescent stage of typhoid fever calls for newer methods and must undergo revision; if drugs fail, bacterial agencies may in time be found to secure the elimination of the Bacillus Typhosus from the body.

It is at any rate certain that typhoid convalescents cannot be lightly discharged as cured because the clinical manifestations have ceased, and that some measure of subsequent observation and control should become a part of routine treatment.

OPERATIVE INTERFERENCE IN CARCINOMA OF THE PANCREAS.

BY

JAMES SWAIN, M.S. M.D. Lond, F.R.C.S.,

Professor of Surgery in University College, Bristol;
Surgeon to the Bristol Royal Infirmary.

PRIMARY carcinoma of the body or tail of the pancreas is capable of removal by a radical operation in the early stages; but inasmuch as jaundice is not present when the disease occurs

in these situations, the diagnosis of the case at a sufficiently early period to justify such a procedure is very rare. When a tumour is palpable it is too late to consider the question of removal; and even under favourable circumstances the operative difficulties are so great, and the accompanying mortality so high, that we may well hesitate before adopting a method of treatment which is so uncertain in result.

Probably not 4 per cent. of cases of carcinoma of the pancreas are sufficiently isolated to render an attempt at radical cure justifiable, even if they could be discovered at an incipient stage of the disease.

Most cases of carcinoma of the pancreas occur in the head of the organ; and in this situation the presence of jaundice with distended gall-bladder, the rapid wasting and other symptoms, render the diagnosis more easy, but a radical operation is practically impossible.

The surgery of malignant disease of the pancreas is therefore mainly concerned with the performance of operations intended only to palliate certain symptoms, and, indirectly, to prolong life in cases which do not admit of the extirpation of the mischief. I propose, therefore, to discuss only this aspect of the subject.

Jaundice, as a result of pressure of the enlarged head of the pancreas upon the common bile-duct, is perhaps the most patent symptom. The cholæmia accompanying it is associated with depression and loss of appetite, and with the deposit of bile-pigment (bilirubin) in the skin, which is attended by considerable itching. This at times is intolerable, it is frequently worse at night, and the patient suffers from want of sleep. These conditions are productive of much misery, though fortunately some do not suffer materially from pruritus and the other phenomena of cholæmia; but when they obtain in a marked degree, the patient may well ask for relief from suffering, even though he knows himself to be afflicted by a mortal disease.

The evil effects of the damming back of the bile by the pressure of the infiltrated head of the pancreas is best obviated by sewing the gall-bladder on to some part of the intestine, and so forming a new route by which the bile can enter the

alimentary canal. There are some conditions in which it might be preferable to attach the dilated common duct to the intestine (choledocho-enterostomy) instead, but such cases are so rare that they need not be further considered.

After operation the jaundice gradually disappears, and with that the general well-being of the patient improves. The pruritus ceases, the more natural colour prevents annoyance from the stare of the ignorant or curious observer, and the patient lives in comparative comfort until the final stage of the disease sets in. These points are exemplified in the following three typical cases, which may be referred to before considering other questions of importance on this subject.

Case 1.—E.H., female, aged 69 years, was admitted to the Bristol Royal Infirmary on January 17th, 1906. Eight weeks before admission she began to have diarrhœa, which continued in spite of treatment. A few days later she noticed that the urine was darker in colour than usual, and soon after this the skin became jaundiced, and gradually became deeper in colour. This was accompanied by an intolerable itching, but there was no pain. Vomiting occurred two or three times a day. Wasting set in rapidly, and she was so thin that the liver and gall-bladder could be plainly seen moving up and down with respiration. The liver was smooth, and extended nearly two inches below the costal margin; the gall-bladder was distinctly enlarged. There was no tenderness on palpation, and no tumour could be felt. The motions were copious, unformed, and of a pale greyish colour. The urine was acid, sp. gr. 1018, contained a good deal of albumin but no sugar, and was of a greenish-black colour from the presence of large quantities of bile. Examined for free glycerine by Cammidge's method, "A" was positive and "B" negative, thus suggesting that the disease was more likely of an inflammatory than a malignant nature. Nothing abnormal was felt on rectal examination. The patient was extremely weak, though there was a fair pulse of 72 per minute, and she was suffering from great depression. Her chief complaint was of the intense itching of the skin, which kept her awake at night and produced a condition of much misery.

On January 19th a vertical incision was made over the gall-bladder, which was enlarged and distended with bile. The common bile-duct was enormously dilated, and the head of the pancreas was enlarged, hard, and nodular. After emptying the gall-bladder by aspiration, it was attached to the duodenum (second part) by means of the Murphy button, and the abdomen was then closed.

Recovery from operation was uneventful, except for a slight temporary rise of temperature at night. No more vomiting occurred, diarrhœa ceased, bile began to appear in the motions six days after operation, and the colour of the skin gradually improved. The Murphy button was passed on the tenth day. The itching of the skin was very troublesome for the first few days after operation, then gradually became less, and disappeared entirely about three weeks after operation. The general condition greatly improved, appetite returned, and she was discharged on February 27th, 1907. At this time the liver dulness was still increased in area, but the gall-bladder could not be felt; the colour of the skin had been steadily improving, but slight jaundice was present.

In answer to an inquiry, Dr. Spettigue informed me that digestive troubles began towards the end of October, but she was able to walk some distance till November. Shortly after this she "became more and more troubled with flatulence, and wasted more rapidly." There was some impaction of fæces on December 4th, and she died on December 8th, 1906. "There was no jaundice at any time, but the typical ashen look of malignancy marked towards the last."

Case 2.—Mrs. W., aged 71 years, had complained of not feeling well for about a year, and had occasional vomiting. On January 27th, 1907, there was a temperature of 101°—102° for about a week, accompanied by vomiting, slight jaundice and constipation. A similar attack occurred on February 5th, but this time the jaundice had become very marked, and continued so. The urine was deeply bile-stained, and the motions "white." The temperature varied between 98.4° and 101°. There was slight loss of flesh, great muscular weakness, and intense irritation of the skin. There had been no pain throughout.

I first saw the patient on February 25th. She was well nourished, and the pulse of good tone. There was mental depression, and the irritation of the skin was the cause of much discomfort. The liver was enlarged to halfway between the umbilicus and costal margin, its surface was smooth; the gall-bladder was distended. Nothing abnormal was felt per rectum. She steadily became weaker, and the appetite began to fail.

On March 6th an incision was made in the right semi-lunar line. The gall-bladder was distended, and $3\frac{1}{2}$ ounces of bile-stained fluid were withdrawn by aspiration. The common duct was greatly dilated; the head of the pancreas was enlarged, and of stony hardness. Cholecysto-duodenostomy and choledocho-enterostomy were scarcely possible, and therefore the gall-bladder was attached to the hepatic flexure of the colon (cholecysto-colostomy) by means of the Murphy button. Three pints of saline fluid were left in the abdomen, which was then completely closed. On March 9th bile appeared in the motions,

and the Murphy button was passed per rectum on March 16th. The itching disappeared, and she regained her normal colour in about a month from the time of operation. Strength was regained, and she got about actively.

Dr. Gaved Stocker informed me that she died on November 21st, 1907, with symptoms of secondary deposit in the liver, which appeared about a month previously. Until the liver mischief occurred she was quite comfortable, and there was no itching and no jaundice to the end.

Case 3.—Mr. P., aged 68 years, after losing flesh for some time, became rather rapidly jaundiced seven weeks before I saw him, on April 28th, 1907. The jaundice was very marked in about forty-eight hours, and had remained so since the beginning of the illness. There was no pain and no sickness. The motions were almost bile-free, and the urine deeply bile-stained. There was intense itching of the skin, causing much distress and keeping him awake at night. The loss of flesh was so rapid that he was about six pounds lighter than when weighed three weeks previously.

He looked thin and ill. The conjunctivæ were of a bright icteric tint, and the skin of a deep yellow colour. The abdomen was flat, and an elongated gall-bladder, about as large as the closed fist, could be felt to reach 2½ inches below the level of the umbilicus. The liver was enlarged to halfway between the ensiform cartilage and the umbilicus. He had suffered from piles for years, but nothing else of an abnormal character was felt per rectum. There was no enlargement of glands above the clavicle.

On May 15th an incision was made over the distended gall-bladder, which was the size of a cricket-ball, and had a " Riedel's lobe " of liver over it. No calculi were felt in the gall-bladder or ducts. The common duct was much dilated, and the head of the pancreas was firm, nodular, and as large as a small Tangerine orange. On aspirating the gall-bladder about fourteen ounces of almost black bile (sp. gr. 1012) were withdrawn. The gall-bladder was attached to the hepatic flexure of the colon by means of a Murphy button, and the abdomen completely closed after the injection of two pints of saline fluid into the peritoneal cavity.

After operation the jaundice gradually lessened and the itching of the skin entirely disappeared. The button was passed on May 30th. He gained strength, and got about actively. Later on he steadily lost flesh, and died on October 12th. Towards the end he had an occasional rigor, followed by slight jaundice, but the conjunctivæ remained clear. (Dr. Hill.)

Apart from the great comfort resulting from the absence of pruritus after such operations, I think there is some gain in the length of life, probably owing to the fact that the general toxæmia

which occurs in these cases is delayed or prevented. This, however, does not admit of proof in a disease which kills so gradually, nor is it a point upon which it is necessary to lay much stress. One of my cases lived forty-six weeks after operation, and fifty-four weeks from the time of the commencement of the jaundice, and the average duration of life of the three cases is about forty-four weeks from the time of the commencement of the jaundice. This compares favourably with my experience of the duration of such cases without operation, and Fitz[1] states that "death, as a rule, rapidly follows the occurrence of jaundice and ascites. It may occur within four weeks after the former, and within six weeks after the latter."

In advising operation, the patient naturally asks what the risks are, and this is a difficult question to answer, for I do not think the cases have always been properly selected. The three cases I have quoted are all that I have operated upon for malignant disease of the pancreas, and they were all successful, but when we inquire into the statistics of a large number of cases the figures are rather disquieting. Robson and Dobson[2] quote Murphy's report, up to 1897, as showing ten deaths in twelve cases of cholecyst-enterostomy for malignant disease, which is equal to a mortality of 83.3 per cent.; and Robson's own cases of a similar nature were seven in number with five deaths.

That the operation of cholecyst-enterostomy is not in itself responsible for this high mortality is clearly shown by the fact that Murphy performed the operation sixty-seven times, and Robson seventeen times, for non-malignant diseases without a single death. We must, therefore, look elsewhere for the reason of the marked death-rate accompanying the operation when performed for malignant disease, and it will doubtless be found associated with the existence of advanced cholæmia and toxæmia, which are known to be most prejudicial to operative success. The problem of the situation is, therefore, solved by early operation as in the three cases I have quoted above, where the average time of operation after the appearance of the jaundice was eight

[1] *A System of Medicine*, edited by T. C. Allbutt, 1897, iv. 278.
[2] *Diseases of the Gall-bladder and Bile-ducts*. Third Edition, 1904.

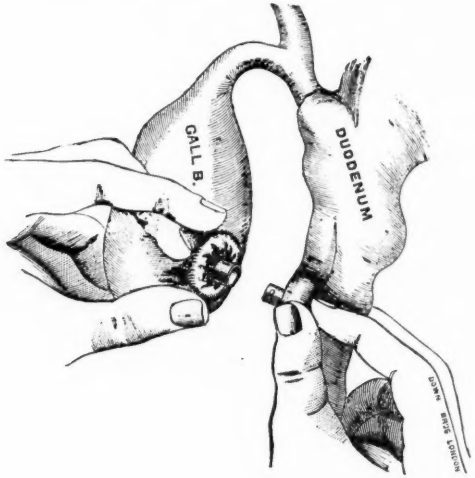
weeks. This is a most important matter, and I believe that a large measure of success can only be ensured by operating before the deposition of biliverdin in the tissues has given rise to that peculiar olive-green colour associated with the condition known as "black jaundice."[1] and which always indicates an advanced degree of cholæmia. It is desirable to decline operation in cases in which this symptom exists. In none of the three cases above recorded was "black jaundice" present, though the third case, which was operated upon ten weeks after the appearance of the jaundice, was apparently beginning to show a change of colour in the skin, which suggested its speedy occurrence if operation had not prevented it.

The measure of relief which follows cholecyst-enterostomy for malignant disease of the pancreas with jaundice and pruritus in cases in which the diagnosis is fairly positive is not, however, the only argument in favour of early operation. In spite of all that has been written on differential diagnosis by means of methods for ascertaining the presence of free glycerine in the urine, the "signe de Sahli" and other tests, it is still impossible in certain cases to distinguish between malignant disease of the pancreas and chronic interstitial pancreatitis, or even gall-stones in the common duct. Under such circumstances the patient should have the benefit of an exploratory operation, for the actual mischief may be removable by surgical measures. The difficulty of diagnosis as regards chronic interstitial pancreatitis is found even after the abdomen is opened; but in all cases of doubt we should perform cholecyst-enterostomy, which is frequently curative and associated with a very low mortality in chronic pancreatitis. It is clear, therefore, that operation is justifiable not only in certain cases of malignant disease of the pancreas when the diagnosis is positive, but also in other cases where the diagnosis is doubtful. In both circumstances the operation should be performed early, as a rule within eight weeks of the occurrence of jaundice.

The details of the operation need not be given, but there are certain points which it is desirable to mention. Reference has only been made to the attachment of the gall-bladder to the

[1] See *Encyclopædia Medica*, art. "Jaundice."

intestine (cholecyst-enterostomy), and this is the ideal operation; for though the jaundice and its accompanying symptoms would be relieved by the somewhat simpler operation of cholecystostomy, this has the disadvantages that (1) the bile is diverted from the alimentary canal, (2) there is a most troublesome biliary fistula, and (3) the mortality under similar conditions would probably be higher than in cholecyst-enterostomy. The latter procedure obviates these objections to a simple opening of the gall-bladder on the surface of the body (cholecystostomy).



Chloride of calcium is administered as a routine measure for about two days before operation, but I doubt if there is any undue tendency to hemorrhage in that stage of the disease in which operation has been recommended, though there undoubtedly is special danger from hemorrhage when the jaundice has existed for a long period.

Whether the gall-bladder should be attached to the duodenum or the colon is not of much importance. Obviously an attachment to the duodenum more closely corresponds to the natural situation for the discharge of the bile into the gut; but the comparative fixity of the hepatic flexure of the colon renders the place

of union equally safe as that of the duodenum. The best plan is to take either of these two positions in accordance with the greater ease and rapidity of operation which it affords.

Rapidity of execution is one of the elements of success, and for this reason it is desirable to use a Murphy button for the union of the gall-bladder and intestine. Much as I prefer to do without any form of mechanical support in intestinal surgery generally, the Murphy button is invaluable here. Not only is there a saving of time by its use, but most operators are agreed that the mortality of cholecyst-enterostomy by direct suture is much higher than by means of the button. It is desirable to place the female part of the button in the gall-bladder, and the male part, which is heavier, in the intestine, as this arrangement favours the falling of the button into the gut when it becomes loose.

In recommending a palliative operation in so serious a condition as malignant disease of the pancreas, the wishes of the patient must be fully taken into account; but if the discomfort is great we can promise relief from jaundice and its accompanying annoyances by an operation that probably has a very low rate of mortality if performed early in the disease, and which tends to prolong life. On the other hand, if "black jaundice" has supervened, it would appear undesirable to recommend an operation which is associated with a high degree of mortality when this condition is present.

THE TREATMENT OF SPREADING PERITONITIS BY DRAINAGE, THE FOWLER POSITION, AND RECTAL INSTILLATION OF SALINE SOLUTION, WITH NOTES OF A SECOND SUCCESSFUL CASE.

BY

C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.

THE following case resembles in some details a case treated a year ago, and published in the *British Medical Journal* of July 13th, 1907.

In this second case the patient was an unmarried lady, aged 19, who was first seen on October 15th, 1907.

Previous history.—General health very good, with the exception of one occasion, two months ago, when there was slight abdominal discomfort, lasting one day, not sufficiently severe to keep the patient in bed.

Present illness.—For last fourteen days discomfort in abdomen. For last four days generalised abdominal pain. For last thirty-six hours moderate general tenderness of abdomen. Up to three days ago the bowels had acted daily, but for fourteen days past the relief had not been satisfactory. Three days ago a dose of cascara produced only a slight movement. Yesterday a soap and water enema produced a fair-sized motion. Menstruation regular; last period normal in every way, ceased ten days ago.

Present condition.—At 6 p.m. on October 15th the abdomen was slightly distended and moderately tender. No mass palpable. Nil abnormal in lungs. Nil abnormal per rectum. No vomiting, but feels nauseated. Is taking only liquids in form of lemonade, tea and water. Pulse, 100. Temperature, 101.5° F. Leucocytes, 17,000. Seen at 10 a.m. on October 16th, in consultation with Dr. R. H. Clay, the abdomen was found more distended, with tenderness most marked in right iliac region. The patient had passed a poor night because of the abdominal pain, which fomentations had failed to relieve. Diagnosis: Peritonitis, probably originating in the appendix. In view of the increasing severity of the symptoms, taken in conjunction with the leucocyte count, operation was decided on. A hypodermic injection of morphia, gr. $\frac{1}{4}$, was given to relieve pain during the interval between the consultation and operation.

Operation.—With the patient under ether, and reclining at an angle of 45°, the abdomen was opened by an oblique incision midway between the umbilicus and right anterior superior spine. Owing to the excessive fatness of the abdominal wall, this incision was prolonged upwards to the costal margin, and downwards and inwards to within one inch of the right pubic spine, the incision measuring eight inches. The peritoneum, with all the viscera below the transverse colon, was acutely inflamed. The small intestines were bright red, the coils loosely glued together by recent lymph. There was no free fluid. The gall-bladder, stomach and duodenum were healthy. Except that they shared in the general injection, the appendix, the uterus and its appendages were normal. The pelvis was drained by one tube in the vagina and another tube in the lower angle of the wound. The pulse rose during the operation from 100 to 150.

After History.—At the end of the operation stercoraceous vomiting commenced and lasted four hours. With the patient in the Fowler position and continuous rectal instillation of saline

solution for thirty-six hours the pulse improved rapidly, and on the eleventh day was eighty with a normal temperature. The kidneys secreted very freely. Brown stinking fluid oozed from and was sucked out of both tubes. Examination of this fluid showed the presence of the bacillus coli and staphylococcus albus. On the tenth day a stercoral ulcer formed at the site of the upper tube, which, although shortened by one and a half inches, had not been entirely withdrawn because of the persistence of the foul discharge. On the appearance of the liquid fæces the tube was withdrawn, and the opening into the bowel closed in four days. The vaginal tube was removed on the twelfth day. By the twenty-eighth day the suprapubic sinus had firmly healed, the rest of the incision having united per primam. During the first thirty-six hours nine pints of saline solution were absorbed per rectum.

When it had been definitely ascertained that there was no leakage of visceral contents, and that the upper abdomen was uninvolved, treatment resolved itself into drainage of the affected area, preventing infection of the upper abdomen by the use of the Fowler position, and supplying the patient with fluid by continuous rectal instillation of saline solution, supplemented later by drinks of water and milk.

No cause for the peritonitis was found, no search being made among the inflamed and adherent small intestines.

Comments : Swing for retaining patient in semi-sitting position. —To a firm pillow are attached, in its long axis, two strips of stout webbing. The strips lie parallel six inches apart. Their ends, which project one foot on either end of the pillow, converge till they meet, and at their junction is inserted a buckle. Two straps, each four feet in length, are attached to the top bar of the bed. If the head of the bed is unusually low these straps must pass from the head of the bed over the top of the bed-rest on which the patient reclines.

It is an advantage to cover the pillow with mackintosh, between the mackintosh and the back of the thighs is placed a folded towel. With the patient reclining on the bed-rest at an angle of 45°, the pillow is placed under the thighs, the surface free from webbing being next the thighs, and is converted into a swing by being attached to the straps which pass from the head of the bed.

The patient is thus in a swing, the seat of which, instead of

being under the buttocks, lies against the back of the thighs. This is practically the method of Mayo-Robson and Moynihan ; it is most efficient, and far more comfortable for the patient than a double inclined plane made of wood or other rigid material.

Apparatus for administering saline solution per rectum.—This consists of a rectal tube, sufficiently rigid not to kink—Moynihan's flexible pewter tube answers well—attached by four feet of rubber tubing to the reservoir of saline solution, which is placed in a water bath, which stands over, and is kept warm by a spirit lamp.

The saline solution, one and a half drachms to the pint, in which stands a thermometer, is kept at a temperature of 100° to 105° F. The reservoir is raised four to six inches above the level of the lower rectum. The end of the rectal tube lies just above the internal sphincter.

A clip on the rubber tube regulates the flow to a steady drip of drops, at the rate of not more than one pint per hour. Flatus is not infrequently passed via the tube into the reservoir.

Morphia.—When, after operation has been decided upon, a delay of a few hours is inevitable, it is cruel not to make the patient moderately comfortable by a hypodermic injection of morphia. Given for this purpose and at this stage, administration of morphia is beneficial, and has the additional advantage of lessening peristalsis, which is one of the chief agents in spreading infection within the peritoneal cavity.

The Fowler position, etc.—The object of the Fowler position is to prevent, or if already present, to diminish infection of the upper abdomen, which is far more fatal than an infection below the level of the transverse colon, absorption taking place much more actively through the lymphatics of the diaphragm than through those of the pelvis.

If infection of the upper abdomen has already taken place, the infected fluid is given a chance of gravitating to the pelvis, whose peritoneum is capable of dealing with large amounts of septic material.

It is probably only a small percentage of the infected fluid which finds it way out by the drainage tubes.

Another advantage of this position is that in a patient with

a distended abdomen the heart and lungs can work much more easily in the semi-erect than in the recumbent posture. The continuous supply of saline per rectum supplies the patient with the water of which he has been deprived by vomiting and starvation, and causes a copious secretion of peritoneal fluid, which washes the peritoneum from above downwards. Murphy, of Chicago, considers that the copious supply of fluid "reverses the current of the lymphatic stream, so that, instead of absorption taking place from the peritoneal surface, the mouths of the lymphatics pour out fluid which bathes the peritoneum and carries the infection down to the pelvis." The kidneys act freely and perform their share in eliminating the poison.

The anæsthetic.—In this, as in most operations, the stimulating action of ether makes it far preferable to chloroform with its depressing effects.

For cases of septic peritonitis ether, given by an expert, is almost ideal.

The shortness of the operation.—In these cases heroic treatment such as evisceration and time-consuming procedures are out of place.

If a viscus in the upper abdomen is leaking the perforation must be either closed or shut off. If the infection is limited to the lower abdomen, unless the source of the infection can be quickly shut off or removed, it is inadvisable to do more than drain the infected area either by the loin, above the pubes or per vaginam, or by all these routes.

With free drainage Nature will localise the infection.

A long operation, theoretically perfect, too often results in the death of the patient, whose life might have been saved by the exercise of elementary common sense.

The importance of keeping the patient in the semi-erect position before, during and after operation.—A patient with an infection of any region of the abdomen should be at once placed in the semi-sitting posture, and maintained in this position during removal to and from the operation table, during the operation, and during the first days of convalescence. It is illogical to allow a patient with septic peritonitis to be laid flat on a stretcher or to

be carried on a stretcher upstairs feet foremost or downstairs head first. A more effectual way of infecting the upper abdomen could not be devised.

Unless this point is attended to there is considerable risk that the efforts of the surgeon to limit the infection to the lower abdomen will be neutralised by the hospital porters.

CASE OF RUPTURE OF MIDDLE MENINGEAL ARTERY: OPERATION; RECOVERY.

BY

G. MUNRO SMITH,

Surgeon to the Bristol Royal Infirmary.

THE following case is, I think, worth a brief record, because of its intrinsic interest, and because the symptoms and physical signs were throughout typical of the lesion, and led to early and successful treatment.

A. L., aged four years, fell out of a cart on June 14th, 1907, and was taken up in a stunned condition. He soon regained his senses and seemed fairly well until the evening of the following day, when he became rather suddenly unconscious, and was at once brought from his home at Hambrook to the Bristol Royal Infirmary.

On admission he was unconscious, but occasionally cried out and moved his limbs restlessly about. It was noticed that he moved his right side much more freely than his left. His pulse was 60, his respirations quiet, with a long-drawn breath now and then, almost like a yawn. The temperature in the right axilla was 99° F., and in the left 98°.

The pupils were equal in size, and reacted to light. Soon after admission, however, the right (side of lesion) became dilated and fixed.

On the right temporal region of the head was an oval, flat, puffy swelling some two or three inches in diameter. No depression or fracture could be felt.

The clinical history, the site of the swelling, the coma, the dilatation of the right pupil, and the partial loss of voluntary

movement on the opposite side to the injury, &c., immediately suggested rupture of the middle meningeal artery, and it was decided at once to open the skull.

A large flap of skin and temporal muscle was turned down, and the trephine applied an inch and a quarter behind the external frontal eminence, and the same distance above the zygoma. Directly the bone was removed a clot presented itself. The opening in the skull was enlarged downwards and backwards, pulsation of the clot soon became visible, and arterial blood oozed out. After rapidly removing some bone, to the extent altogether of two or three inches square, the bleeding point was found in the posterior branch of the middle meningeal, which had been torn across by a fracture in the bone over it.

I passed a silk ligature on a curved needle through the dura mater, under the artery, and tied the vessel. Bleeding at once stopped. A large quantity of clot was then evacuated. This clot had burrowed downwards towards the base of the brain, as well as over the lateral convolutions ; and in places the brain was separated from the skull for a space of three-quarters of an inch, showing how considerable the pressure must have been.

During the operation the right pupil contracted to the same size as the left, the pulse rose to 160; all signs of compression ceased ; but even on the following day the patient, although quite able to move his left arm, preferred to move his right, and there was some temporary ptosis of right eye-lid.

On June 17th his temperature rose to 100° F., but after this his recovery was rapid and uninterrupted. Before the boy returned to his home a gutta-percha shield was made to protect the large area of brain which was deprived of its bony covering.

It might be wise in these cases to turn down a piece of bone (osteoplastic) instead of using the trephine and bone forceps ; but it is impossible to be certain of the position of the bleeding point. Most of these injuries of the middle meningeal artery are of the anterior branch, it is true, but there was no clinical sign to show that it was the posterior branch that was ruptured in this case, and it would have to be a very large flap of bone to afford access to all possible points of hæmorrhage.

Death is by no means uncommon after these operations, probably from want of expansion of the brain substance, or from œdema following the sudden relief of pressure.

ABDOMINAL FIBROMA SIMULATING SPLENOMEGALY.

BY

DAVID A. ALEXANDER, M.B.

ON August 19th I was consulted by a man, J.P., aged 61, feeble, pale and thin, who complained of indigestion and pain in the stomach, and of health impaired for upwards of six months.

On proceeding to inspect the abdomen, it was at once obvious that the left side was the seat of a tumefaction, the contours of which were those of an enlarged spleen. Smooth and firm, emerging from the left hypochondrium, and filling the flank, its mesial border lay in a line from the anterior superior iliac spine to the epigastrium, and presented an edge with a double indentation resembling splenic notching, and splenic dulness was co-extensive with it in all dimensions. Concomitant symptoms of leucocythæmia were wanting, there had been no hemorrhages, there were no sensory defects; other organs were normal, glands were not enlarged, nor was there tenderness over bones.

The patient's previous history was without bearing on the existing symptoms, except that he was a painter, and had apparently once suffered from lead colic.

Four days later occurred an incident not unusual in the progress of splenic leucocythæmia, violent diarrhœa, ushered in by a rigor and a rise of temperature, accompanied by a hemorrhage from the bowel, and tenderness and œdema of the parietes over the swelling. With the subsidence of the attack the latter underwent no diminution, but was rather larger.

On September 1st the blood was examined, and all the changes characteristic of leucocythæmia were found to be absent. From that time until the patient's death on November 22nd the course of the complaint was that of increasing asthenia. As food was refused, and the abdominal walls grew thinner, certain bosses were to be felt upon the surface of the swelling, and its conformity to the spleen was somewhat lessened.

A partial autopsy permitted the nature of the growth to be ascertained. Underlying the abdominal walls were some coils of emptied intestines superficial and adherent to it; others, also adherent, were pushed aside. The spleen was found unaltered in its usual site, the tumour in contact with it, as it was also with the left kidney. In removing it the abdominal

parietes were exposed behind, its origin apparently being from the fibrous tissues underlying the peritoneum. No metastases were discoverable.

The tumour was firm and heavy, and showed on section several cavitations, where, as with the bosses on the surface, the tissues were breaking down. The microscope showed these tissues to be fibrous; no sarcomatous cells were observed.

Had the patient come earlier under observation the tumour, like the desmoids of the anterior abdominal walls, might have been removed by surgical measures.

It remained, however, to present a difficulty in the diagnosis, firstly from leucocythæmia, and after that from other splenic enlargements, in which the evidence of the blood was not final.

The preparation of sections and the examination of the blood were the work of Professor Walker Hall.

Progress of the Medical Sciences.

MEDICINE.

Hyperthyroidism.—Typical Graves's disease is diagnosed without difficulty. Many cases are, however, met with clinically which may be regarded as atypical, to which the term hyperthyroidism is applied. Cases are now frequently regarded as belonging to this category which formerly were classed as neurasthenia, hysteria, functional heart disease, &c. A. R. Elliott[1] regards the question of the pathogenesis of Graves's disease settled in favour of the theory of Möbius, viz. that a perverted over-activity of the thyroid is the essential feature. In support of this view he quotes the results of surgical treatment in Graves's disease, and the experimental evidence which has been obtained from thyroid feeding.

The exact rôle played by the thyroid in physiological metabolism is still largely a matter of conjecture. The gland greatly influences the development of the organs of generation, and is, in its turn, markedly affected by the sexual changes in the life of an individual. This connection, however, appears to be more marked in the female, in whom congestion and functional hypertrophy occur during puberty, menstruation, pregnancy and lactation. (The infantilism and asexuality of cretins is well known.) Associated with this thyroidal swelling may occur

[1] *Am. J. M. Sc.*, 1907, cxxxiv. 390.

fine tremors, sweatings, flushings, nervousness, mental depression, palpitations, some tachycardia, elevation of temperature, loss of weight, exaggerated reflexes and pigmentation. Further, when pregnancy occurs in a myxœdematous woman it is sometimes associated with marked improvement in her condition. Hyperthyroidism and Graves's disease are closely allied, the main difference being one of dosage. Symptoms of hyperthyroidism may occur in patients suffering from simple goitre, thyroid cysts, adenoma, carcinoma, and tuberculosis of the gland. Further, they may be noted when the gland is the seat of venous engorgement, secondary to chronic heart disease. Digestive toxæmia, syphilis, diabetes and Bright's disease, may all be associated with a toxic form of hyperthyroidism. Again, hyperthyroidism may be met with in the early stages of tuberculosis; in fact, the two conditions are frequently confused, having several symptoms in common, viz. slight pyrexia, sweating, flushing, increased reflexes, rapid pulse, and decline in the body weight. Most cases of pronounced chlorosis are also accompanied by manifestations of hyperthyroidism.

The thyroid secretion probably plays a part in the resistance offered by the body to acute infections. Vincent[1] found swelling of the thyroid in 50 per cent. of his cases of acute rheumatism, in 11 of 17 cases of typhoid, in 1 of 4 of meningitis, in 7 of 15 of measles, and so on. It is interesting to observe that many cases of Graves's disease have suffered from preceding acute infections, and possibly there is some connection between the two, for any prolonged functional strain of the gland may give rise to a condition of irritability, which only requires some exciting factor of a sudden functional demand, such as shock or emotion, to establish Graves's disease.

Hypothyroidism.[2]—In addition to the three well-known conditions of complete hypothyroidea—myxœdema, idiocy and cretinism—a less well-defined form, due to a partial diminution of the thyroidal secretion, is described under the name of "myxœdema fruste." Many of these cases are said not to tend to progress to complete myxœdema. The symptoms are as follows: There is marked anæmia, with diminution of the red cells and hæmoglobin; the heart is dilated and weak, and the pulse rate is frequently increased, running up to 120. The skin is dry and pale, with supraclavicular pads of fat. Backache, violent joint pains, paræsthesias, neuralgias and pseudo-angina, may all be prominent symptoms. There is marked asthenia, a subnormal temperature and subjective feeling of cold, great dyspnœa, and the characteristic giving way of the knees. Profuse hemorrhages may occur. The facial expression is described as one of "sorrowful fatigue." The hair becomes

[1] *Bull. et Mem. Soc. Méd. de Paris*, 1906, xxiii. 598.
[2] *Am. J. M. Sc.*, 1907, cxxxiv. 859.

prematurely grey, and may become brittle and fall out. Transitory glycosuria has been noted, and albumin and casts may be present. That this condition is due to inefficiency of the thyroid is proved by the facts that there is some atrophy or fibrosis of the gland, that it may be caused by partial thyroidectomy, and that it is relieved by the administration of thryoid.

Secretory nerves of thyroid.—Edmunds[1] has carried out a further series of experiments on the question of the existence of secretory nerves to the thyroid, which seem to show that a paralysing operation, which consisted in the removal of a great length of the superior laryngeal and vago-sympathetic nerves on one side of the neck in dogs does have some effect, both clinical and pathological, but that this effect is only slight. He infers that the secretion of the thyroid is mainly due to a chemical stimulus, which acts directly on the secreting cells or on the nerve endings distributed to them, or possibly through the nerve fibres which pass along the blood vessels. In favour of the view of special secretory nerves, he adduces the question of the influence of fright as an exciting cause of Graves's disease.

Hypoparathyroidism.—Halsted[2] describes a case of parathyroid insufficiency secondary to operation, in which the condition was recognised and ameliorated by the administration of parathyroid glands. Tetany was not permitted to develop, neither were Trousseau's nor Chvostek's signs obtained. The removal of the parathyroids was accidental, and occurred during the excision of a goitre. The symptoms from the first were peculiarly periodic, coming on in attacks consisting of a feeling of numbness in the lips, as if the circulation of blood had stopped in them and then been suddenly let in again. These feelings passed over the face and down the arms, were said to be "indescribably awful," and were accompanied by inability to close the eyelids. During these attacks the patient looked alarmingly ill. Administration of parathyroid gland produced almost instantaneous and marked improvement : the loss of weight ceased ; the appetite, which had been perverted, improved ; the "attacks" were cured ; but a feeble neurasthenic condition persisted, and eventually the patient became a complete invalid, in a condition of cachexia parathyreopriva. Later, constant and distressing pains were felt in the knees, elbows and shoulders, with much crackling in the knee-joints.

Experimental work[3] on the parathyroid shows that tetany develops with great regularity in dogs after the extirpation of the parathyroids. This tetany can, however, be completely removed for several days by saline infusion into a vein, following venesection. Emulsion of parathyroid, injected into the veins,

[1] *J. Path. and Bacteriol.*, 1907–8, xii. 102.

[2] *Am. J. M. Sc.*, 1907, cxxxiv. 1.

[3] *Bull. Johns Hopkins Hosp.*, 1907, xviii. 327.

has also cured well-developed tetany. Violent tetany, which developed in a girl from whom most of the parathyroid was removed during an operation for goitre, was relieved by subcutaneous injection of an emulsion of the parathyroids of the cow.

The internal secretion[1] of the parathyroid seems to differ in at least one important point from that of the thyroid in the absence of any appreciable amount of iodine in these glands. It is interesting to note[2] that it is very much more difficult to produce tetany in herbivora than in carnivora after parathyroidectomy. This may be connected with the greater toxicity of the food of the latter, but possibly it is due to a wider distribution of parathyroid tissue in herbivora, some of which escapes removal.

Many observers[3] have recently maintained that atrophy of the thymus in children and wasting of the tissues go together, Dudgeon[4] and others stating that atrophy of the thymus is the most constant lesion in marasmus. Glandular atrophy in marasmus is not, however, always confined to the thymus. R. L. Thompson describes a case of infantile marasmus in which extreme atrophy was found in the thyroid, medullary suprarenals and parathyroids, in addition to the atrophy in the thymus. In this case the liver, spleen and kidneys, were practically normal, though there was noticeable atrophy of the intestinal mucosa. The atrophy of the parathyroids in this case led to further research, the condition of the parathyroids in 12 cases of infantile marasmus being compared with the condition of these glands in 12 control cases. The result showed that these glands were only just a little more than half the size of those in the control cases. The histological changes which occur are (*a*) degenerative, (*b*) sclerotic, the former affecting the parenchyma, the latter the interstitial tissue. The author does not imply that the atrophy of the parathyroid is the cause of the marasmus, but that the profound changes which occur in the ductless glands must affect the elaboration of internal secretions, which are so essential to health. These histological findings help us to see more clearly why the results are so frequently fatal.

The conclusions reached by Forsyth[5] as to the nature and functions of the parathyroids differ in many respects from those enumerated above. He holds that they are portions of the main thyroid gland which have not yet formed vesicles, but which are functionally active. Further, he holds that parathyroid tissue may develop into thyroid tissue, and that the secretion of the parathyroid glands is a colloid material indistinguishable from thyroid colloid. The parathyroids therefore, according to this author, possess no peculiar function.

J. R. CHARLES.

[1] *Ibid.*, p. 331. [2] *Ibid.*, p. 333.
[3] *Am. J. M. Sc.*, 1907, cxxxiv. 562. [4] *J. Path. and Bacteriol.*, 1905, x. 173.
[5] *Quart. J. Med.*, 1907–8, i. No. 2.

SURGERY.

A very great change came over the methods and results of surgical operations when accurate ligatures were substituted for avulsion and the actual cautery in the treatment of wounded vessels. A further great advance has now been made in the **surgery of the blood-vessels,** for it has been shown that their walls can be submitted to suture without occlusion of their lumen, and thus wounds in their walls may be sutured, venous, arterial or arterio-venous anastomosis may be deliberately undertaken, large vessels opened and subjected to a search for emboli or submitted to plastic operations. Pearce Gould,[1] (just) after Ballance and Edmunds'[2] important work had appeared on the ligature of arteries in their continuity, says "the only reliable treatment of a punctured wound of an artery is the aseptic ligature of the vessel above and below the puncture." But the recent work has abundantly demonstrated that this position may now be abandoned, and that the walls of large arteries may and ought to be sutured in such a way as to leave their lumen free. It will be convenient to describe the subject under the headings of (1) Arterial suture, (2) Vascular anastomosis, (3) Arteriotomy for embolus, and (4) the plastic operations for aneurism, rather than to attempt any historical account of the various steps in the progress of this important change.

Arterial suture.—According to American authors, it was an English surgeon, Hallowel,[3] who first, in 1759, conceived the idea of treating an arterial wound without bringing about occlusion of its lumen. His patient had a punctured wound of the brachial artery, and he placed a pin through the edges of the wounded artery, and wound a ligature round its ends. In this case success resulted, but it must have been in spite of all the dangers of the septic era of surgery. It is only within recent years and under the most careful aseptic methods that any considerable series of cases has been presented of successful arterial suture. Jassinowsky,[4] in 1889, proved the feasibility of the method in animals, and he was followed by many other workers, so that in 1902 Schmitz[5] was able to collect twenty-one cases of the suture of lateral wounds of the large arteries (axillary, femoral, popliteal brachial, common iliac, common carotid, internal carotid) in the human subject, and to formulate the conditions necessary for success. These were: Asepsis, the use of very fine round needles and silk, the employment of the continuous suture (which included all the coats of the vessel), and temporary hæmostasis carried out by

[1] *Treves's System of Surgery*, vol. i., 1895, p. 501.
[2] *The Ligature of Arteries in Continuity*, 1891.
[3] Watts, *Ann. Surg.*, 1907, xlvi. 374.
[4] Jassinowsky, *Die Arteriennaht*, Dorpat, 1889.
[5] Quoted by Watts, *loc. cit.*

means which imposed no injury of the vessel wall. And to these may be added that the sheath of the vessel should be separated from it by a clean dissection for as short a distance as is compatible with the arterial suture, and then separately sewn over the wounded vessel as a protection. The whole secret of success lies in the promotion of healing in the walls of the vessels without producing a thrombus. It is well known that the liability to the latter formation depends more upon injury to the intima of the vessel than anything else. Hence it is that no clamps can be used for the vessel wall unless they are carefully guarded by rubber, and have broad smooth surfaces. The edges of the wounded artery must not be touched with forceps, the needles must have no cutting edges, and the silk must be lubricated by sterilised vaseline.

Vascular anastomosis or the circular suture of vessels.—The next accomplishment in arterial suture was the circular or end-to-end union of vessels, and, curiously enough, the advocacy of methods for doing this has gone through the same stages as in the case of intestinal anastomosis. That is to say, the first stage consisted in showing that end to end stitching was difficult, and often resulted in failure; then the mechanical contrivance was introduced—a bobbin, in fact—to replace the necessity for stitching; and, lastly, it has been recognised that, after all, accurate stitching without reliance on any mechanical method gives the best results. Murphy,[1] in 1897, began experimental work on the circular suture of arteries, and he introduced the invagination method, by which the proximal end of a divided artery was drawn within the lumen of the distal end by sutures which were tied outside the wall of the latter, a circular suture completing the operation, and in the same year he was able to carry this out successfully in the case of a man whose femoral artery had been severed by a bullet in Scarpa's triangle. In 1900 Payr[2] introduced his ring or anastomosis button, made of magnesium, a substance which he averred was absorbed by the tissues. This has quite recently been improved by Crile,[3] who has added a little handle to it, which makes it much easier of manipulation. It consists of a small tube, about $\frac{1}{4}$ inch long, corresponding to the diameter of the vessel to be sutured. On its outer surface are two grooves running round its circumference. One end of the artery is threaded through the lumen of the tube, and then folded back like a cuff and tied by a thread on the upper groove. It will thus have its intima outwards. Over this the other end of the artery is coaxed and tied round the lower groove, the two vessels having thus their intimal surfaces in apposition. This apparatus has been used with great success by Crile in the immediate transfusion

[1] Quoted by Watts, *loc. cit.*

[2] Payr, *Verhandl. d. deutsch. Gesell. f. Chir.*, 1900, p. 31.

[3] *Ann. Surg.*, 1907, xlvi. 329; *Rev. méd. du Canada*, 1904–5.

of blood, the central end of the radial artery of the donor being joined to the central end of a superficial vein of the recipient. But it remains to be shown whether this method presents any real advantages over saline transfusion. Carrel,[1] in 1902, introduced his method of suture, which in his own hands and in those of his co-workers has given such brilliant results. It consists in first obtaining a clean-cut edge of both arterial ends, then bringing these together by three tension sutures equidistant from one another, and finally sewing the edges by a continuous fine silk suture without everting them at all. The very simple and yet important point consists in the value of the tension sutures in bringing the edges of the vessel into accurate apposition, as the sutures are held up two at a time. By this method not only have severed arteries been united, but arteries have been united to veins, sections of veins have been substituted for arteries, and whole organs with their arteries and veins have been transplanted from one animal to another. At present this work is chiefly experimental, for although several times it has been attempted in man to substitute the saphenous vein for a blocked femoral artery, none of them have been permanently successful.

Nevertheless, the scientific interest of this work is very great, and will certainly lead to valuable clinical success in the future. As a wonderful example of what may be achieved in this direction, the following may be selected. Carrel and Guthrie[2] removed both kidneys and ureters, together with a portion of the aorta and vena cava, from a dog, and transplanted them into the abdomen of another dog, implanting the great vessels into those of the new host after a corresponding portion of his own organs had been removed. The dog lived for eight days, and secreted copious urine. Watts gives an account of forty-three experiments on the great vessels in the neck and groin of dogs, and his beautiful illustrations, taken at periods varying from three weeks to three months afterwards, show clearly how accurately the wounded vessels will unite with practically no diminution of their calibre. These include cases of end-to-end junction of divided arteries, one artery joined to another, arteries joined to veins, and veins substituted for arteries.

Arteriotomy for embolus and thrombosis.—It is clear that if wounds of arteries can be successfully sutured, then an artery may be opened with impunity in order to remove a thrombus or embolus; and this has been repeatedly proved in clinical cases—that is to say, large arteries, *e.g.* the external iliac, femoral and popliteal have been opened, their contents removed, and then they have been sewn up without the occurrence of any recurrent or secondary hemorrhage. But it must be reluctantly admitted that so far in none of these cases has complete success

[1] Carrel, *Lyon méd.*, 1902, xcviii., 859.

[2] Carrel and Guthrie, *Science*, N.Y., 1905; *Am. Med.*, 1905, x. 284.

been achieved, for although gangrene seemed to be averted or delayed for a time, yet it always occurred later and required amputation. Sabanajew,[1] in 1896, thus opened a femoral artery for a rheumatic embolus, which he failed to find. Lejars,[2] in 1902, removed a thrombus from the external iliac artery, but subsequent thrombosis occurred, and necessitated amputation a month later. Stewart,[3] in 1905, in a case of threatened gangrene after contusion of the inguinal region, opened the popliteal artery, and finding nothing, having closed this, opened the femoral artery and removed a displaced atheromatous patch. He excised the diseased part of the artery and sewed the two ends together; but the gangrene was not arrested, and amputation had to follow. The same surgeon removed an embolus from the bifurcation of the femoral artery, but after a temporary promise of success the leg had to be removed below the knee six weeks later. Sampson Handley[4] has recently related a very similar case.

The plastic operations for aneurism.—It is now more than ten years since Matas[5] invented his new operative treatment of external aneurisms, and although it has been followed by very successful results, it is remarkable how little attention or even notice has been bestowed upon it in English text-books. It consists essentially in opening the sac of the aneurism and dealing with it from within. The latter procedure may take three different forms. (1) The obliterative operation consists in finding all the vessels which open into the sac, and sewing together their open mouths by silk stitches. The sac wall is then plicated, and sewn as a sort of pad beneath the skin. According to Gibbon,[6] this operation has been carried out twenty-four times, and in not one case has relapse or recurrent hemorrhage occurred, but in one (Frazier[7]) it led to gangrene. The latter case was an aneurism which involved the common femoral at its bifurcation, and its treatment involved obliteration of both superficial and deep vessels. (2) The restorative operation is only concerned with a distinctly saccular aneurism with a narrow neck of communication with the parent artery. This opening is sewn together with interrupted silk sutures, and the lumen of the parent trunk is left unobliterated. The ideal conditions which allow of its execution are, of course, somewhat rare. It has been performed eight times, most of the cases dealing with popliteal aneurisms. In all the result has been successful, and no relapses have occurred. (3) The reconstructive operation. In this case a more or less fusiform aneurism is dealt with, or, at any rate,

[1] Quoted by Stewart, *Ann. Surg.*, 1907, xlvi., 342.
[2] *Bull. et Mem. Soc. de Chir. de Paris*, 1902, xxviii.
[3] *Ann. Surg.*, 1905, xlii. 621. [4] *Brit. M. J.*, 1907, ii. 712.
[5] *Med. News*, 1888, liii. 462; *Ann. Surg.*, 1903, xxxvii. 161.
[6] *Ann. Surg.*, 1907, xlvi. 366. [7] *Ibid.*, p. 358.

one whose cavity is not separable from that of the parent trunk. After opening the sac, a rubber tube is laid along its floor, running from the afferent to the efferent trunk. Over this the walls of the sac are sewn by interrupted Lembert sutures, the tube being removed before the last stitches are tied. This has been carried out in seven cases, but in two of them relapse, *i.e.* re-formation of the aneurism has occurred. At first sight it may appear as if the obliterative operation were only a return to the old operation of Antyllus, whereby the sac was first incised and then excised with ligature of all bleeding points. But the cardinal distinction consists in the fact that the outside of the sac is not touched except in opening it, and thus the veins and collateral arteries, which are so often closely associated with the sac wall, escape the risk of injury.

E. W. Hey Groves.

Reviews of Books.

A System of Medicine by many writers. Edited by Thomas Clifford Allbutt, M.A., M.D., and Humphry Davy Rolleston, M.A., M.D. Volume II., Part I. Pp. xii., 1087. 1906. Part II. Pp. xvi., 1055. 1907. Volume III. Pp. xii., 1040. 1907. London: Macmillan and Co., Limited.

The arrangement of Volume II. is much altered. Tropical diseases and internal parasites go elsewhere, and rheumatic fever has been brought in. Two hundred pages are allotted to a general pathology of infection by Professor Ritchie, which forms a welcome guide to the overwhelming literature of immunity and the action of bacteria on the body. There is also considerable advantage in having collected together for comparison full accounts of the various antitoxins, antivenenes and opsonins, instead of discussing them under the several diseases, such as diphtheria, tuberculosis, &c. Thus the interesting and detailed account of opsonins shows their relation to the different theories of phagocytosis and immunity. Ritchie concludes his long article by pointing to the foundation for an extended knowledge of the normal interaction of the elements or cells of the body, which is given by this study of their resistance to bacteria. For this resistance, after all, is only an application of the normal processes of nutrition and digestion.

A separate paper is devoted to the pathology of streptothrix infections, while that of protozoa is discussed in another volume. Hutchinson is thus relieved from giving detailed accounts of the

spirochæta of syphilis, though he appears fairly satisfied as to its causal relations to the disease. It may be noted that he is still unconvinced as to the proofs of transmission of syphilis to a third generation.

In the pathology of scarlatina, Dudgeon discusses the rival organisms of Klein, Class and Mallory, and thinks that the main question centres around the streptococci, about which unfortunately all is in confusion.

One of the most interesting articles is that of McVail on the protection afforded by vaccination, with the results of recent investigations.

The theory of ptomaine poisoning has been vigorously pruned, and the symptoms are now in most cases referred to the rapid action of pathogenic organisms, such as the B. enteritidis. Phosphorus poisoning is well described, but the result shows how contradictory are the theories of its pathology. Oliver has improved his article on plumbism, and added a too brief account of the granular degeneration of the red cells, but here and in other articles we could wish for more editorial influence in the direction of conciseness and classification. On page 904, line 13 it would seem that a misprint of "observed" for "prolonged" has slipped in.

The size and scope of the second part of this volume, and the fact that the editors have seen fit to depart from their original scheme, in so far as to issue a volume of their *System of Medicine* entirely devoted to this group of diseases, sufficiently indicate the rapid growth of what is practically a new branch of medicine, namely tropical medicine.

In a sense, knowledge, more or less complete, of most of the diseases included under tropical medicine has existed as a matter of ancient history; what is new lies in their investigation by modern methods, which in no branch of medicine have been productive of more fruitful results. These methods of investigation, giving us for the first time a scientific insight into the real nature and modes of origin of tropical diseases, have completely transformed the subject. That we are only upon the threshold of this great branch of medicine is evident, and every year may be expected to mark a fresh advance. It is impossible in the limits of our space to give any adequate account of the whole contents of this volume; it must suffice to say that it is likely to be the standard work of reference on the subject for some years to come. Throughout the book the subject dealt with has been entrusted to competent hands, and the reader may confidently rely on finding information, which is trustworthy and embodies recent work. A feature of the book are the special articles or, as the editors justly entitle them, monographs on the biology of the numerous animal parasites which produce or convey tropical diseases. These articles are by well-recognised

authorities, and are liberally and effectively illustrated. Prof. Minchin deals with the protozoa, Mr. F. V. Theobald with mosquitoes, Mr. E. E. Austen with blood-sucking flies, Mr. R. I. Pocock with ticks, and Mr. A. E. Shipley has adapted to modern nomenclature Sir Patrick Manson's article on worms. To workers in the tropics these articles must prove of great value, and will be further read with interest by all who wish to keep abreast of medical science. Nothing is more remarkable than the contrast in this one respect between the important part now played by biological studies in medicine and the very small bearing that such studies appeared to have upon it at so short an interval of time as thirty years ago.

It is not only to medical men practising in the tropics that this book will be useful, for in these days of rapid and easy intercommunication between all parts of the world, and of the growing importance of our colonial empire, a practitioner in England may be at any time called upon to diagnose and treat some disease imported from beyond the seas. For instance, last winter a case of kala-azar was admitted into one of the Bristol hospitals. If he can take down this book from his shelves, he will get from it just the kind of help he requires, and obtain not merely a smattering, but a truly scientific account of the disease he may have to treat. The rapid transit of the present day has indeed brought fresh problems to be solved by the practitioner in the tropics, for as appears in several articles in this volume, facilities for travel aid in the conveyance of infective diseases directly by man, or indirectly by parasites, in a way formerly unknown.

The third volume has also been largely rewritten. Dr. A. E. Garrod contributes new articles on rheumatoid arthritis, osteo-arthritis, spondylitis and the joint lesions in infective diseases. The distinction drawn between the first and second diseases is quite definite. The cases in middle-aged women, commonly called rheumatoid, are here classed as osteoarthritis, and similar instances are said occasionally to occur in children. He recognises the self-limited course of rheumatoid arthritis in spite of its tendency to relapses, and gives an interesting account of recent work on the bacteriology, confessing that it is as yet impossible to say whether Schuller's villous arthritis is really distinct. There clearly is a monoarticular type sometimes limited to one finger, but more often seen in the knee or shoulder, and it seems difficult to imagine that this can be an early stage of ordinary rheumatoid. On the other hand, we miss any definite account of the type where every joint is affected and anchylosed. Still this may possibly be due to individual peculiarities. The article, and especially the remarks on treatment, are well abreast of our present knowledge. Some note of Latham's spinal blisters might, however, have been added.

Rose Bradford revises the late Sir W. Roberts' paper on gout,

adding some account of the purin bodies generally, and performs a similar task for the late Dr. Ralfe's diabetes insipidus.

One of the most perfect and charming articles is the last work of the late Professor Dreschfeld on ulcer of the stomach, which gives a most interesting account of recent work on this difficult subject, of the different lines of treatment recommended, the various complications and the theories of its pathology. He points out the need of improving the general nutrition of the body as rapidly as possible, if we are to hope for a complete cure without the disheartening relapses which attend the ordinary methods.

Treves's articles on appendicitis, obstruction, visceroptosis and acute peritonitis, as well as Allingham's rectal diseases, have been more or less rewritten by other authors. Lockwood's account of appendicitis is a mine of information on the pathology and complications of this disease, and his minor clinical hints, such as the deceptive symptoms seen in gouty patients and the importance of a careful rectal examination, are well worth remembering.

The revised chapter on the colon epitomises the recent discussions on ulcerative colitis and asylum dysentery, but the author gives his reasons for separating them both from true dysentery. We must not omit to notice the contributions of Acland on subphrenic and other peritoneal abscesses, and the new articles on bacteriology by Andrewes and Slater. On the whole, great labour has been expended to incorporate all important additions to our knowledge in the subjects treated of in this volume.

The Chemical Basis of Pharmacology: an Introduction to Pharmacodynamics based on the Study of the Carbon Compounds. By FRANCIS FRANCIS, D.Sc., Ph.D., and J. M. FORTESCUE-BRICKDALE, M.A., M.D. (Oxon.). Pp. xii., 372. London: Edward Arnold. 1908.

As in the decorative arts there have been long periods of remarkable progress due to the separate study of individual branches, such progress leaving the student time to study only the barest rudiments of the other branches whilst he confines his practice to one alone, so in medicine the growth of specialism has been the means of enormously advancing our knowledge. But it becomes necessary that various branches should be again linked together, in order that full advantage may be taken of the increase due to separate growth, and each branch may profit by the separate growth of the others; it is the need of "linking up" that has called this book into existence, and by the co-operation of an expert in chemistry and an expert

in pharmacology the ideal method has been followed, and the authors are to be heartily congratulated upon the result.

Let us say at once that the task before the authors has been one of exceptional difficulty. It is true, and duly acknowledged by the authors, that the ground has been to some extent prepared for them by Fraenkel's *Arzneimittelsynthese* and Brunton's *The Relation of Chemical Structure to Physiological Action*, but the present authors have boldly adopted, as far as is at present usefully possible, an arrangement that follows the usual lines of text-books on organic chemistry, with the result that we have now a systematic and clear exposition of the principal facts of our present knowledge of the subject in the handy compass of a book of less than four hundred pages.

The literature on the pharmacological properties of the numerous modern synthetic drugs is enormous, widely spread through the journals of all countries, and not easy to estimate at its true value, but these difficulties have been ably attacked and most creditably surmounted. As to the difficulty in estimating the value of the various drugs, there is throughout the book a wholesome restraint from forcing the therapeutical or physiological action of drugs to fit the theoretical requirements of their chemical formulæ, and, as the title of the work suggests, the principal stress is laid upon the physiological action of a drug rather than upon its therapeutical action. Whilst, as the authors themselves state, "clinical experience is the only test of the value of a drug," there must have been great temptation to consider a drug useful or useless according to its chemical structure, a temptation very successfully rejected on the whole. We note, however, a small slip in this direction, where they state that the liquid nonvolatile hydro-carbons "are without physiological action, and pass through the body unaltered. Hence the uselessness of petroleum emulsion . . . as a drug." One might as well say that because oil will not chemically unite with water, nor dissolve in it, and has been proved to have no obvious action on calm water, it is therefore utterly useless to pour it upon troubled waters. But on the whole the numerous pitfalls which await those who approach the subject from a purely chemical and physiological standpoint have been avoided in a manner worthy of very high praise. Thus the authors have avoided digressions into the "*Seitekette*" theory, although this must have had great attractions for them, or the varying action of certain drugs when given in large or small doses. They have by this restraint been able to confine themselves to a clear statement of the ascertained facts on the relationship of chemical structure to physiological action. As to the arrangement adopted, the chemistry of each group of substances is shortly described, and then the physiological characters are dealt with, and the relationship shown. Although the first glance at the book, from the

profusion of formulæ, might possibly discourage those whose knowledge of organic chemistry has atrophied from disuse, this very profusion, in conjunction with the lucid treatment of the chemistry, is of the greatest assistance, and few will find themselves unable to follow the authors through these 360 pages. Indeed, the clearness and ease of expression is a striking and very welcome feature of this book.

The book does not pretend to be exhaustive, for their object would not have been attained so successfully had the underlying facts been smothered by a too great wealth of detail. Thus we find mention of the properties of allyl-thio-urea, or Thiosinamine, but none of the combination with sodium salicylate known as Fibrolysin, the beneficial action of the latter depending entirely upon the Thiosinamine portion. The majority of recent synthetic drugs of any importance will be found here; thus the practitioner will find Bromural and Veronal, and is hardly likely to require a reference to Broponal, although he may find its formula.

One great value of the systematic treatment of any subject is that it shows up clearly the important gaps in our knowledge, and suggests research in those directions, and here we have numerous groups thrown up in this relief, such as the group of the glucosides, where there is a large field for research in biophysical and bio-chemical directions.

There is no doubt that the influence of this book will be widely felt. It gives a definite object and aim to the medical student in his study of organic chemistry, and definitely links up that subject in his mind to physiology, giving it a higher value in his curriculum than he or his teachers are inclined to give it at present; it will greatly influence the teaching of pharmacology and therapeutics; it will stimulate research, and be of inestimable assistance to the manufacturers of synthetic drugs in this country; and by its aid the practitioner may form some judgment upon the probable properties of these new drugs.

Professor Francis Francis and Dr. J. M. Fortescue-Brickdale have written a very valuable book, and the Bristol Medical School may well be proud of it, for it is the standard book in the English language upon the subject with which it deals.

The Prolongation of Life. By ÉLIE METCHNIKOFF. The English translation edited by P. CHALMERS MITCHELL, M.A., D.Sc. (Oxon.), F.R.S. Pp. xx., 343. London: William Heinemann. 1907.

The title of this fascinating, brilliant, but not altogether convincing book does not indicate its full scope, but serves rather as a sort of link whereby its different sections are more or less loosely united. It is termed by its author a sequel to *The Nature*

of Man,[1] and from its pages may be obtained a detailed presentment of Professor Metchnikoff's point of view as regards human life as a whole, as well as his particular recommendations for prolonging its duration. The book is therefore of great interest and importance, and for this reason it is hoped that a review of rather greater length than is usual in the *Bristol Medico-Chirurgical Journal* will not be found unacceptable.

The general scheme of the work is somewhat as follows. Of the nine parts into which the book is divided, the first four deal explicitly with the duration of life. The first part is entitled "The Investigation of Old Age;" its object is to show that senility is caused by the activity of certain phagocytic cells, whereby the higher and more differentiated tissues, such as those of the central nervous system, are gradually absorbed and replaced by fibrous tissue. The part played by the internal secretions of such organs as the thyroid and the suprarenal capsules is considered as certainly secondary and possibly unimportant. The detailed observations on which Professor Metchnikoff founds this view are in the highest degree interesting and suggestive, and constitute by far the strongest part of the work, taken as a whole.

The second part deals with "Longevity in the Animal Kingdom," and is equally interesting, if not quite so convincing. Briefly, the author's thesis is that the duration of life in vertebrate animals varies inversely with the length of the colon. This is illustrated and supported by a reference to numerous animal types, and is explained by the assumption that senility and death are due to auto-intoxication from the products of putrefaction in the large intestine. Unfortunately for this theory, which is ingenious in conception and comprehensively supported by observation, the most notable exception happens to be that which interests us most, namely man himself. The long colon is here associated with a duration of life which, though not approaching that of the tortoise, is yet of very respectable proportions as compared to that of other mammals. How far such an important variant can be considered to nullify the general proposition is, of course, a difficult question; but in dealing with a topic which, after all, is highly theoretical, it certainly seems to us especially necessary to include satisfactorily all known facts.

The third part, "Investigations on Natural Death," appears to be of the nature of an intercalation, and in a certain sense to interrupt the sequence of thought. Possibly, however, it could not have been inserted elsewhere with any less inconvenience. Considered as a separate essay, it is of much interest, dealing as it does with the mode of death in many different kinds of beings. Natural death is defined as a death not due to external or

[1] Heinemann.

accidental causes, not dependent on inanition or the exhaustion consequent on such functions as reproduction, but a general atrophy of the tissues consequent on auto-intoxication. Professor Metchnikoff draws a somewhat elaborate parallel between "natural" death and sleep. The latter he inclines to regard as a temporary auto-intoxication; but in reality the experimental evidence for much of this theorising is, as Professor Halliburton has said, of the "slimsiest" character.

In Part IV., the question is propounded: "Should we try to prolong human life?" and, incidentally, the methods by which this may be compassed are sketched. After a review of the historical aspect of the subject, which shows a masterly power of condensing much erudition into a few short paragraphs without loss of lucidity, the author quotes Sir Hermann Weber's well-known address to the Royal College of Physicians, which was delivered in 1903. With the general advance in hygiene has come a corresponding lengthening of the average duration of life, and this is fully recognised by Professor Metchnikoff, and by other authorities, such as Sir Lauder Brunton, who have written on the subject. The Professor, however, is ready with three proposals for further advance in this direction. The first is the injection of a cytotoxic serum, which, though poisonous in large doses, would in minute amounts tend to strengthen the formed elements of the body, and so render them more resistant to those phagocytic processes which are the immediate cause of senile degeneration. Secondly, he is prepared with suggestions as to the large intestine. He points out the possibility of prolonged life after complete exclusion of considerable portions of the gut from functional activity. He had not, it appears, then been made acquainted with Mr. Arbuthnot Lane's work at Guy's Hospital, but we believe that emissaries from the Pasteur Institute have recently examined some of the cases on which these extensive operations have been successfully performed. For technical and other reasons, however, Metchnikoff is not quite prepared to advocate either of these methods; and seeing how difficult intestinal antisepsis appears to be in practice, he falls back on the somewhat humdrum expedient of advising prolonged mastication of food, in order that partially digested masses should not lie and putrify in the intestinal canal. However, as Dr. Hutchison has pointed out, the residue of food which escapes absorption under ordinary circumstances is only a small fraction of the whole, so that prolonged mastication, even if it led to complete absorption, could not materially affect the amount of toxic material in the colon. Whether, as Sir Lauder Brunton has suggested, undigested food masses may predispose to cancer by irritating the mucous membrane at such points as the pylorus is another question, into which the author does not enter.

Professor Metchnikoff then describes at some length his

views on the advantage of eating cultures of the *Bacillus acidi lactici* as a check to intestinal putrefaction. The evidence he adduces is of a striking character, and consists partly of an account of experimental researches and partly of a description of numerous races of men who live largely on sour milk, and, according to the author, are notably long-lived. Whether or no longevity may be assured by eating the *Bacillus acidi lactici*, there seems very little doubt that it checks the growth of various other organisms which infest the intestinal canal in man. Soured milk has been successfully employed in diarrhœal conditions of infants, although some authors consider that excessive absorption of lactic acid gives rise to rickets. If Metchnikoff's views are correct, Pasteurization, which destroys the lactic acid bacilli but leaves many others of the *subtilis* group to multiply, is quite an irrational procedure.

This concludes that portion of the book which is directly concerned with the prolongation of life.

The next two parts are curiously disconnected from the problem of the prolongation of life. The first deals with the evidences of evolution displayed by the rudimentary organs in man and animals; it attempts to explain certain psychic phenomena, such as somnambulism and hysteria, as reversions to ancestral states of mind, functional recrudescence, as it were, of conditions normally present, but in a rudimentary and latent way. The accounts of somnambulistic patients are curious and interesting. Then Professor Metchnikoff goes on to deal with "Some points in the History of Social Animals," his main thesis, which he supports by his usual wealth of biological detail, being that as the scale is ascended it becomes increasingly impossible to sacrifice the individual to the community; thus all theories of a socialist or collectivist character are essentially at fault, because they do not sufficiently regard the biological point of view—development of the individual, and secondarily of the State or rather of executive power. Metchnikoff, apparently looks to intellectual development to produce a better order of things in human society.

Thirty pages form Part VII., and are devoted to a survey of the Professor's favourite topics of optimism and pessimism. His view, it must be confessed, seem to us to be supported by somewhat fragmentary evidence. The poets and philosophers adduced as examples of the pessimistic frame of mind cannot be held to exert any preponderating influence on the majority of civilised mankind, with the sole exception of Buddha, who is claimed by the Professor as one of them. Byron, for instance, has almost vanished as an "influence," at any rate among his own countrymen. The curious life history of the reclaimed pessimist will be read with interest, and doubtless many will note that on a previous page (p. 130) the author states that he has twice experienced rather

severe morphia poisoning himself. Towards the end of this part the view is propounded that pessimism in youth is succeeded by optimism in old age, and while this in a modified degree is often true, we cannot feel that it is anything like an accurate generalisation, at any rate for Anglo-Saxon peoples.

Finally, the relation between science and morality is discussed. Here is, to our mind, some of the most remarkable writing in the book. The admirable restraint and the fairness with which opposing views are stated is most remarkable, coming as it does from a man whose own opinions are evidently clearly formed and firmly held. His object is to find a basis of morality apart from any metaphysical sanction; and though we admire the way in which the subject is handled, it appears to us that the author has set himself an absolutely impossible task, and that his theory of orthobiosis is no more stable a foundation for a system of ethics than any of those the inadequacy of which he exposes. There are many eloquent passages in this portion of the book, but we venture to think that the substance of much of it has been expressed before, and that in point of view of eloquence the words of one whom he regards as a pessimist are more telling even than those of Professor Metchnikoff: "Happy is the man that findeth wisdom and the man that getteth understanding . . . length of days is in her right hand, and in her left hand riches and honour. Her ways are the ways of pleasantness and all her paths are peace."

Degeneration in Families: Observations in a Lunatic Asylum. By FR. LANGE, M.D. Authorised Translation from the Danish by C. Chr. SONNE. Pp. 207. London: Henry Kinpton. 1907.

This work contains Dr. Lange's views on the course of degeneration in families, and is based upon a close investigation into the heredity of certain patients received in the Lunatic Asylum at Middelfart, Denmark. His object has been to discover evidence not only of insanity, but of all morbid traits or habits, immoral conduct and defined neuroses, and he has endeavoured to trace the specific results of epileptic, alcoholic and insane heritage in all the members of a family, and not merely in the insane individuals of it. The principal theme is the investigation of the mental phenomena, morbid or otherwise, evidenced in what he calls his great "families," in which, although not clearly stated, he seems to include groups whose history is identifiable on both paternal and maternal sides for four generations. Forty-four of these so-called families have been collected, in which all classes of society, but mostly the educated, have been included. These 44 groups have contributed 70 cases of undoubted insanity to the Middelfart Asylum, whilst there is evidence of 358 other

individuals possessing more or less morbid characters; in all, 428 persons showing acknowledged neuropathies. Moreover, in the families contributing the insane patients a considerable number of cases of pronounced insanity has been traced to other asylums. Amongst the members of 23 out of 44 families, actual suicidal attempts were made in 39 cases, sexual perversions found in 8 (probably understatement); alcoholic proclivities were only noted in 18 out of the 44 groups. The author emphasises as a curious fact that only one case of definite criminality was found. His inquiries have taken another turn, that is as to the intellectual value (apart from the pathological relations) of the individuals in the great families. He observed that amongst the 70 persons admitted into the asylum, a comparatively elevated standard of culture and intelligence was notable generally, and dealing with 28 families, whose position in society was such as to allow of intellectual development and its rewards, he found that 72 persons reached high station by reason of their mental ability and culture, and at least an equal number attained more or less widely-recognised success as exponents of art and literature. The general characteristics of the mental disorders amongst the great families seems to be rather that of unstable and oscillating equilibrium, and impulsiveness of the lighter kind than of pronounced or incurable maladies. The author, in search for a common bond or characterising somatic condition, which should unite these families into a group, thinks he has discovered this in a so-called "uratic diathesis or degeneration," either as causal connection, or as a parallel branch from the same trunk; the proof of this diathesis demanded consisting in the unmistakable presence of "gravel" The distinction to be drawn between the mental disorders associated with uratic degeneration and again with those groups of degeneration immediately dependent on alcohol, epilepsy and direct insane inheritance, seems to be that, in these latter, excesses and crime—brutalities, so to speak—alone characterise; in the former or uratic group, good average, even high standard of mental ability had been reached. In the first case it is exemplified in the unripe fruit torn from the tree or untimely rotten; in the second, the final and inevitable decay of a once flourishing tree. The rest of the book consists of general observations on psychology and mental degeneration, which though thoughtful need no special mention here. Notwithstanding that the intimate investigation of long lives of family descent is one which should undoubtedly yield fruitful results, this work lacks any specific scientific value; it is too discursive, too full of general statements which hardly require making, and certainly wait for proof. There is no opportunity for critical comment on the conclusions which the author draws from his observations on his "great families," for it is not obvious of what these consist. In short, much that might be valuable in

the author's labour has suffered by the indefinite quasi-colloquial manner of its presentation; interesting indications rather than precise statements result. It must be remembered, however, that Dr. Lange prefers to introduce the work modestly as "observations" rather than as a scientific treatise. We could wish his mode of expression to be less complicated and prolix; the book is often tedious and uneasy reading, and this does not in any way appear to be the fault of the translation, which seems skilfully done.

Alcohol and the Human Body. By Sir VICTOR HORSLEY and MARY D. STURGE. Pp. xxv., 370. London: Macmillau and Co. Limited. 1907.

This is a small book which is intended not only for the use of the medical profession, but also for the general public, for whom a glossary of medical terms is inserted at the end of the work. Being concise in its arrangement, it gives a large amount of information, and covers a very wide field in a relatively small space. The effect of alcohol on most of the organs of the body is considered in some detail, and a great deal of care has been expended in obtaining the most reliable information with regard to the statistics. The statements and opinions of experts are freely quoted throughout. Chapters on the special effect of alcohol on children, and on the influence of prenatal alcoholism upon the race are included, while Dr. Newsholme adds an interesting chapter on the influence of drinking on the national health. The work contains a large number of illustrations, some of which—notably those on the nervous system, which have been prepared from sections supplied by Dr. F. W. Mott—are particularly good. We can confidently recommend it to all who are interested in the harmful effects wrought by alcohol on the individual and on the race.

The Medical Annual, 1907. Bristol: J. Wright & Son.—Once more we have to welcome this almost indispensable annual. It is too well known to require anything like an introduction to our readers, and in saying that it represents an even further advance on the merits of its predecessor we bestow on it the highest encomium. We are glad to see that the stereoscopic plates are as good and useful as those in the earlier volumes. We strongly advise those who are not already subscribers to become so.

Clinical Lectures on Neurasthenia. By THOMAS D. SAVILL, M.D. Third Edition. Pp. xvi., 216. London: H. J. Glaisher. 1906.—The fact that this book has reached a third edition in seven years indicates that it it has been found useful by a number

of readers. The present edition profits by some additions and excisions, which the author's experience has shown him to be advisable, but follows the same general plan as the previous ones. It retains the form of lectures; not, in our opinion, the most satisfactory one for a book of this length on a single disease. The author maintains his position as to the autotoxic origin of neurasthenia from gastro-intestinal disorder; this, however, rests on no more certain evidence than the frequency and antecedent occurrence of gastro-intestinal derangements in neurasthenia. At the same time, the author does not deny that in a number of instances causes roughly classified under the term "mental" play an important part. In the section on cerebral symptoms he seems to be trying, under the name of "neurasthenic insanity" to add another variety to the already involved nomenclature of insanity. We do not think that he has made out his case, although the characteristic of bodily weakness or other physical disorder preceding and accompanying the mental disorder is a distinction of some importance, it is hardly sufficiently so to be diagnostic of a variety. Nor does his proposed classification of insanity seem to us particularly illuminating, nor one by which real advance is likely to be made. At the same time the chapter is an interesting one. The section on treatment will be found useful, and the book is eminently readable. It concludes with a bibliography, which has been brought up to date.

Transactions of the American Dermatological Association. Thirtieth Annual Meeting, 1906. Report of the Proceedings by GROVER W. WENDE, M.D.—As usual, these *Transactions* comprise a useful and interesting series of excellently-reported dermatological cases, with beautifully reproduced photographs of the lesions, macro-and microscopic.

Among the papers may be mentioned particularly one from Robert W. Taylor, who advances the view that in syphilis the virus is spread rapidly by means of the veins and not lymphatics, the chancre being an expression of the earliest local effect.

Also a paper by Engman and Mook, in which they show that lesions of the skin are produced by means of the blood vessels, and not the skin glands in bromide and iodide eruptions. There is a useful report on a case of pemphigus vegetans by J. M. Winfield, with an excellent review of the reported cases. The finding of the B. pyocyaneus in pure culture in the blood, and the same bacillus and staphylococcus aureus in the lesions, is of importance.

Breakey's paper on "phagedenic and serpiginous ulcers and infective granulomata" is also of importance.

The usual summary of the dermatological cases of the year is always of value, and might be imitated in England with advantage.

Department of Neurology. Harvard Medical School. Vols. I. and II. Boston, Mass. 1906—1907.—These volumes consist of papers on neurological subjects contributed by members of the staffs of the Massachusetts General Hospital, the Boston City Hospital, the Long Island Hospital and the Neurological Laboratory to various medical journals during each year respectively, and collected in this way for future reference. The collected papers are worth perusing, and reflect credit on the work of the hospitals concerned. They will repay perusal, not only by the neurologist, but by the general practitioner.

The Quarterly Journal of Medicine. Vol. I., No. 1. Oxford: The Clarendon Press. October, 1907.—This is the first number of a new journal which has been founded by The Association of Physicians of Great Britain and Ireland, by whom the editorial committee and a body of collaborators were appointed at the first annual meeting (1906). One hundred and fifty-five members attended the meeting. The papers now published are thirteen, of the highest scientific value, and such as would be expected from the distinguished editors whose names appear on the title-page.

Post-Graduate Clinical Studies for the General Practitioner. By H. HAROLD SCOTT, M.B. Pp. ix., 166. London: H. K. Lewis. 1907.—This volume contains a collection of nine instructive essays which for the most part have been read by the author at medical meetings. The object of the writer, who has certainly succeeded in his attempt, has been to bring forward questions, mainly connected with diagnosis, which are of special interest to the general practitioner, and to discuss them at much greater length than is possible in the ordinary text-books. The author has treated his subjects throughout in a thoroughly practical manner, and quotes very largely from his own experience when discussing the various problems. The last chapter differing from the rest in scope, deals with the question of syphilis in the lung.

Bilharziosis. By FRANK COLE MADDEN, M.D. Pp. 78. London: Cassell and Company Limited. 1907.—Dr. Madden's monograph—based as it is upon a long experience of bilharzial disease in Egypt—is full of instruction, especially to those of us who are not fully aware of the widespread and serious nature of the ravages of this parasite. A good account of the pathology, symptomatology and treatment is given, divided into chapters according to the systems and organs affected. We should like to know a little more of the transference of the worm from the portal to the systemic circulation, considering the importance of the urinary aspects of the disease.

The book is well printed and illustrated, and Dr. Madden has earned the thanks of the profession, at home and abroad, for giving so readable an account of his subject.

Editorial Notes.

University College Colston Society.

THE ninth annual dinner of this Society, held on January 14th, 1908, under the Presidency of Mr. George A. Wills, should in future times be looked upon as a historic occasion, for it was then that the President, in giving the toast of "The Pious Memory of Edward Colston," was able to announce that his father, Mr. Henry Overton Wills, had expressed his desire to give the munificent donation of one hundred thousand pounds towards the endowment of a University for Bristol and the West of England. This date would naturally become marked as "Founder's Day," and the speech of Sir William J. Collins, M.P., did much to emphasise the importance of the occasion. Bristol had already done good work towards the foundation of a Western University, and if anyone asked the question why there should be a University in Bristol, it was only necessary to "look at the map of England, and you will see." The sympathetic speeches of various distinguished guests, fellow-workers from Liverpool, at a meeting of the Bristol University Club on February 8th, should do much to convince the citizens of the great advantages which similar University schemes had conferred on Liverpool and other University towns in the North of England, and to prevent the recurrence of the reiterated question, Why do we want a University? and of what use will it be to us? Sir Rubert Boyce remarked that all the Universities in the north would gladly co-operate with Bristol in helping on views which were absolutely in accord with the spirit of the age. The modern University was of national importance. It was one of the lighthouses of the country, one of the national depots, and one of the national safeguards. The corporations and the Government were ready to give them every assistance, as they felt convinced that the modern University had come to stay. Chambers of Commerce gave unqualified

praise to the modern University, for it helped in the every-day life to enrich commerce. Commercial men sounded the praises of Universities, and spoke of the advantage gained by having them in their midst. Professor Myers and Professor Mackay further urged their hearers to press forward with the University scheme, to go right ahead and win.

A writer on the subject of the "Multiplication of Universities" (*The Outlook*, February 1st, 1908), remarks that "the presence of a University in a manufacturing town acts as a stimulating influence to its inhabitants, and when the proper subjects are handled and particularly fostered, as a directing force to the rising generation in their industrial and commercial struggle. But it does more than this, because it also elevates the tone of the community, and teaches it to make the most of life, to seek in learning and the fruits of culture the secrets of happiness and the highest pleasures of life: to live and to work, as Goethe nobly said, 'by developing all that is in us . . . so as to make our existence satisfactory.' The citizens of Bristol, by the establishment of University College, have shown themselves to be keenly alive as regards the needs of higher education in the progressive work of their industries and their commerce. They know that knowledge, and the highest and most advanced of it, can be the only real fulcrum by which power and success can be attained." University College when started thirty years ago was liberally supported by Oxford: indeed, the Master of Balliol was one of the most ardent supporters of the scheme. He maintained that "as Mahomet cannot come to the mountain, the mountain must go to Mahomet." The multiplication of Universities has been the inevitable result. Where there were half a dozen thirty years ago there are now fifteen, and it is proposed to create more in Ireland by means of Government funds. It is too late now to raise the useless question whether there is any need for more, this has been long since settled; but here in Bristol we of all people should be the last to raise it, inasmuch as although Birmingham, Manchester, Liverpool, Leeds and Sheffield have been endowed with faculties for the giving of degrees, Bristol remains almost alone of the large cities of the country in being still without this power. If it was

right that the other Universities should have been established, it must be still more right that Bristol should share with other large centres the right to have a University of its own. These arguments apply with redoubled force to the Medical Faculty, the students of which have hitherto been unable to obtain a degree without going elsewhere to find it, and hence have been obliged for the most part to rest content with the qualifications of the Medical Colleges, although their work has fully qualified them for the University medical degrees.

* * * * *

The Drink Problem.

RECENT lectures given in Bristol—the one by Sir Victor Horsley and the other by Dr. Sims Woodhead—have directed the minds of the medical men and of the public to this question. These authorities are both so decided in their views that they think that nothing short of total abstinence is tenable, and that no stimulant should be given even as a medicine, excepting from a medicine bottle in carefully measured and regulated doses. The medico-sociological aspects have been fully dealt with by Dr. Kelynack in his book bearing the above title (Methuen & Co., London). Impending legislation on the subject demands that the medical profession should express its views on this two-sided question, in which so many people can discover only the one side. The dangers of excessive drinking are admitted on all hands, and even moderate drinking is to most persons unnecessary, and to some dangerous; but the medical man, from his education and training, is perhaps in a better position than most to appreciate the complexity of the problem, which is so radically and ruthlessly dealt with by the enthusiast and the faddist when they maintain that the world would be so much better if alcohol had never existed, or if it could be abolished. The uses of alcohol, both as food and as drug, are fully dealt with in the appropriate text-books, and the fallacies in the usual arguments of the rigid abstainer are not likely to divert the medical man from the moderate use of alcohol both in health and disease.

The International Congress for Tuberculosis, at Washington, September, 1908.

THE organisation of the English section of this Congress has been entrusted to Professors Sir Clifford Allbutt, W. Osler, and G. Sims Woodhead.

On Saturday, February 8th, a preliminary meeting was held in the large hall of the Royal Society of Medicine, when several hundred representative physicians, surgeons and pathologists were nominated to serve on a large General Committee. It was also decided to appoint an executive committee of twenty-five, six of whom should be chosen from London, nine from the provinces, five from Scotland, four from Ireland, and one from Wales.

Bristol and the West of England will probably form a local centre, and it is hoped that the district will be well represented at the Congress. Professor Walker Hall will be glad to have the names of those who intend to visit the Congress, and the titles of any proposed communications. Within a few weeks detailed information concerning the various arrangements will be available for distribution.

Notes on Preparations for the Sick.

Bromural.—KNOLL & Co., London.—The drug is a derivative of bromine, valerian and the urea basis, and stands, therefore, in its action between a hypnotic on one side and a sedative on the other. Though having a slight hypnotic effect, it is absolutely harmless, and can be especially recommended in cases where a powerful hypnotic is not advisable.

Extensive experiments have been carried out lately with the drug in this country and on the continent, and the fact was established that "Bromural" can be recommended safely as an effective and harmless sedative, inducing dreamless, natural sleep without any by- or after-effects.

It acts quickly, and its action continues for several hours. The ordinary dose is one or two tablets, each containing 0.3 gm.

Glycerophosphates (Roberts).—ROBERTS & Co., 76 New Bond Street, London.

Syr. Glycerophosph. Co. = Syr. Roborans (Roberts).

Glycerole Glycerophosph. Co. = Glycerole Roborans (Roberts).

In the presence of so many more modern preparations of the glycerophosphates, the above-mentioned, the original preparations of Robin, should not be forgotten. The one with sugar, the other with glycerine, alike in all other respects, are excellent preparations, which have an established reputation for use in all conditions of general and nervous debility.

Hémoglobine Deschiens.—ROBERTS & Co., London.—Two preparations of this are in common use—

Deschien's Syrup, and
Deschien's Hémoglobine Wine.

Granulated Hémoglobine and Dragées are also prepared. They are all obviously useful when organic preparations of iron are desirable, as in chlorotic anæmia and neurasthenic conditions. It is a well-known fact that the inorganic preparations of iron often disagree with individual patients, and that in such cases the preparations of this kind are invaluable.

Metramine: Palatinoids.—OPPENHEIMER, SON & Co., London. This drug is described as a highly-purified form of hexamethylene tetramine, formed by the action of ammonia on formaldehyde. It is believed to liberate formaldehyde in the body, and to this may be ascribed its value as a urinary antiseptic. The drug has received a great variety of trade names, but the palatinoid form is a very convenient one, and it should have a great field of utility in all suppurating conditions of the urinary tract. It is sufficiently powerful to destroy gonococci, as well as typhoid and other bacilli.

The compound palatinoid containing with metramine (gr. iv.) small doses of sandal oil and copaiba should be of great benefit in cases of persistent gonorrhoea.

Membroids.—EVANS SONS, LESCHER & WEBB, London.—We have received a sample of these preparations. The drug is enclosed in a thick membranous envelope, which is capable of resisting acid digestion in the stomach, whereas in the alkaline pancreatic juice it readily digests, and therefore the drug is not likely to give rise to any gastric disturbance, but will be readily absorbed from the small intestine. We have found that the membrane is very insoluble in acid fluids, but that it readily digests in pancreatic solution. This form of administration must commend itself for the treatment of intestinal conditions, and in cases where nauseous eructations are commonly the result of a liberation of the drug in the stomach.

Holadin: the entire pancreas gland extract.—FAIRCHILD BROS. & FOSTER, New York.—In capsules containing three grains.

This powder possesses great tryptic activity, and contains also the amylotic and lipolytic enzymes. It contains the important cell constituents, lecithin and nuclein, and is put up in a very convenient form for such cases in which pancreatic activity is deficient.

Lotio Pancreatis: a trypsin surgical solvent.—It is prepared from the fresh pancreas, and contains the trypsin enzyme in a stable solution. It is to be used twice daily, after dilution with an equal volume of distilled water.

Glycerole Trypsin.—ARMOUR & Co., Chicago.—This is a similar fluid, containing the pancreatic ferments in permanent solution, ready either for topical surgical use or for internal medication. As a surgical solvent it may be applied without dilution.

"Soloid" Black Mercurial Lotion.—BURROUGHS, WELLCOME & Co., London.—"Soloid" Black Mercurial Lotion presents a very convenient means of preparing a mercurial or black lotion, the value of which is well recognised in condylomata and other syphilitic manifestations, in pruritus and in many other skin affections. One, powdered and shaken with one fluid ounce of water, makes a lotion corresponding in strength of active ingredient to Lotio Hydrarg. Nigra, P.B. The official preparation may be more closely approximated by the addition of 24 minims of glycerine to the fluid ounce.

Elixir Combreti.—HAROLD E. MATTHEWS, Clifton.—Some attention has been attracted of late by a new drug "Combretum," consisting of the leaves and twigs of *Combretum Sundaicum*, introduced as a remedy for the opium habit. *Combretum Sundaicum* is a powerful climber growing abundantly in the state of Selangor, Malay Peninsula. The Chinese coolies use a decoction of the roasted leaves and twigs to counteract the craving for opium, with, it is stated, great success. A chemical investigation has been made which showed tannins and resins to be present, but no alkaloid and only a trace of a glucoside. As the glucoside is not found in the roasted drug, it is unlikely that the properties of the drug are due to it. Elixir Combreti is an elegant, non-alcoholic preparation ,of agreeable taste, containing the water-soluble constituents of the drug. It is administered in doses of two fluid drachms, the patient's allowance of opium being concurrently diminished.

Collargol: a colloidal silver preparation, Heydan-Credé.—E. W. BLASIUS, London.—This non-poisonous antiseptic is recommended for the internal treatment of septic diseases as well

as for the cleansing and dressing of wounds. Tablets, containing ¾ gr. of Collargol, are of use for internal medication, and tablets containing 4 grs. are convenient for the preparation of solutions and enemata. It is also made up as Unguentum Credé for external use.

Carbonic Acid Baths: A Zucker's system.—THE HYGIENIC COMPANY, 26 Southwark Bridge Road, London.—The Nauheim system has given rise to a demand for the use of baths in which the generation of carbonic acid in the bath is an essential element. It is not always possible to go to Nauheim, but it is easy to take a carbonic acid bath at home. A bottle of the formic acid is put into the bath water, and two pads containing the alkali continue to give rise to constant and regular effervescence in the bath for a considerable time. The water becomes saturated with the gas, a portion of which is deposited in globules on the patient's skin. The temperature of the water should be about 93° Fahr. The method has the merit of being simple, easy and effective.

The Library of the Bristol Medico-Chirurgical Society.

The following donations have been received since the publication of the List in December:

February 29th, 1908.

J. Michell Clarke, M.D. (1)	1 volume.
H. Griffiths (2)	1 ,,
L. M. Griffiths	1 ,,
The Editor of *Albany Medical Annals* (3)	1 ,,
The Medical Officer of the London County Council (4)	1 ,,
R. Shingleton Smith, M.D. (5)	1 ,,
James Willing, Jun., Ltd. (6)	1 ,,

SIXTY-SEVENTH LIST OF BOOKS.

The titles of books mentioned in previous lists are not repeated.

The figures in brackets refer to the figures after the names of the donors and show by whom the volumes are presented. The books to which no such figures are attached have either been bought from the Library Fund, or received through the *Journal*.

Allen, R. W. ..	*The Opsonic Method of Treatment*	1907
Barker, L. F. ..	*Anatomical Terminology* [B.N.A.]	1907

Barton, G. A. H. *Guide to Administration of Ethyl Chloride* 2nd Ed. 1907
Bramwell, B. .. .. *Clinical Studies* .. .. .. (5) Vol. V. 1907
Brockbank, E. M. *Life Insurance and General Practice* 1908
Calmette, A. .. .. *Les Venins* 1907
Clarke, J. J. .. .. *Protozoa and Disease* .. .. .. Pt. II. 1908
Cunning, J. .. .. *Aids to Surgery* .. .. 2nd Ed. 1908
Fagge, C. H. .. *The Pocket Anatomy* .. .. .. 6th Ed. 1908
Fortescue-Brickdale, F. Francis and J. M. *The Chemical Basis of Pharmacology* 1908
Francis and J. M. Fortescue-Brickdale, F. *The Chemical Basis of Pharmacology* 1908
Griffiths, H. .. .. *Plenum Ventilation* .. .. (2) [1905]
Hood, D. W. C. .. *Some of the Clinical Aspects of Pneumonia* .. 1907
Jacobson and R. P. Rowlands, W. H. A. *The Operations of Surgery.* 2 vols., 5th Ed. 1907
Kehr, H. .. .. *Drei Jahre Gallensteinchirurgie* 1908
Laveran, A. .. .. *Traité du Paludisme* .. .. .. 2me Éd. 1907
Laveran and F. Mesnil, A. *Trypanosomes and Trypanosomiasis* (Tr. by D. Nabarro) 1907
McCullock, H. D... *Stray Leaves, and some Fruit on Cancer and Tuberculosis* 1907
Macfie, R. C... .. *The Romance of Medicine* 1907
Mesnil, A. Laveran and F. *Trypanosomes and Trypanosomiasis.* (Tr. by D. Nabarro) 1907
Metchnikoff, É. .. *Prolongation of Life.* (Ed. by P. C. Mitchell) 1907
Meyer und H. Rieder, E. *Atlas der klinischen Mikroskopie des Blutes* .. .. Zweite Aufl. 1907
Oliver, G. .. .. *Studies in Blood Pressure* .. .. 2nd Ed. 1908
Richmond, G. E. .. *Disease, its Cause and Prevention* 1907
Rieder, E. Meyer und H. *Atlas der klinischen Mikroskopie des Blutes* .. .. Zweite Aufl. 1907
Rogers, L. .. .. *Fevers in the Tropics* 1908
Rowlands, W. H. A. Jacobson and R. P. *The Operations of Surgery.* 2 vols., 5th Ed. 1907
Sherrington, C. S. *The Integrative Action of the Nervous System* 1906
Tilley, H. .. .. *Diseases of the Nose and Throat*.. 1908
Tunstall, F. J. Warwick and A. C. *First Aid* .. .. .. 5th Ed. 1908
Tweedy and G. T. Wrench, E. H. *Rotunda Practical Midwifery* .. 1908
Vierordt, H. .. .. *Daten und Tabellen fur Mediziner* .. .. Dritte Aufl. 1906
Wallis, C. E. .. *The Care of the Teeth in Schools* 1908
Warwick and A. C. Tunstall, F. J. *First Aid.* .. .. .. 5th Ed. 1908
Wrench, E. H. Tweedy and G. T. *Rotunda Practical Midwifery* .. 1908
Wyllie, J. .. .. *Tumours of the Cerebellum* 1908

TRANSACTIONS, REPORTS, JOURNALS, &c.

Albany Medical Annals	(3) Vol. XXVIII.	1907
American Association of Obstetricians and Gynecologists, Transactions of the	Vol. XIX.	1907
American Laryngological Association, Transactions of the		1907
American Ophthalmological Society, Transactions of the	Vol. XI. Pt. 2	1907
American Surgical Association, Transactions of the	Vol. XXV.	1907
Association of American Physicians, Transactions of the	Vol. XXII.	1907
Boston Medical and Surgical Journal, The	Vol. CLVII.	1907
Bristol Directory, Wright's		1908
British Almanac, The		1908
British Gynæcological Journal	Supplement to Vol. XXII.	1907
British Medical Journal, The	Vol. II. for	1907
Clinical Society of London, Transactions of the	Vol. XL.	1907
Edinburgh Medical Journal, The	N.S., Vol. XXII.	1907
Gazette hebdomadaire des Sciences médicales de Bordeaux	Tom. XXVIII.	1907
Glasgow Medical Journal, The	Vol. LXVIII.	1907
Hazell's Annual		1908
Hospitals—		
Guy's Hospital Reports	Vol. LXI.	1907
Johns Hopkins Hospital Bulletin, The	Vol. XVIII.	1907
Journal of Anatomy and Physiology, The	(1) Vol. XXVI.	1892
Journal of Experimental Medicine, The	Vol. IX.	1907
Lancet, The	Vol. II. for	1907
Library, The	Vol. VIII.	1907
London County Council, Annual Report of M.O.H. for 1906	(4)	1907
London Medical Journal, West	Vol. XII.	1907
Medical Directory, The		1908
Medical Library and Historical Journal	Vol. IV.	1906
Medical Press and Circular, The	Vol. CXXXV.	1907
Medical Record	Vol. LXXII.	1907
Medical Review, The	Vol. X.	1907
Münchener medizinische Wochenschrift	Bd. II. für	1907
Ophthalmological Transactions	Vol. XXVII.	1907
Otological Society, Transactions of the	Vol. VIII.	1907
Practitioner, The	Vol. LXXIX.	1907
Progressive Medicine	Vol. IV.	1907
Revue hebdomadaire de Laryngologie	Tom. XXVII.	1907
Scottish Medical and Surgical Journal, The	Vol. XXI.	1907
Smithsonian Report for 1906		1907
West London Medical Journal	Vol. XII.	1907
Whitaker's Almanack		1908
Willing's Press Guide	(6)	1908
Year-Book of the Scientific and Learned Societies, The		1907

MEETINGS OF SOCIETIES.

Bristol Medico-Chirurgical Society.

December 11th, 1907.

Dr. HENRY WALDO, President, in the Chair.

Dr. ALEXANDER showed a case of **Cervical Scoliosis with Hemidiaphoresis.** The patient was a woman aged 61, and presented a remarkable bony swelling in the right side of her neck. She sweated on the left side of the face and body, but not on the right, and on the latter side felt undue coldness. No mydriasis was present. The speaker suggested that the deformity was the result of old tubercular disease of the cervical spine. Dr. J. O. SYMES suggested that spasm of muscle (torticollis) might have caused the deformity. A skiagram showed no thickening of bone suggestive of tubercular trouble.

Dr. ALEXANDER also read notes on a case of **Abdominal Fibroma** simulating splenomegaly. (For these notes see page 60.)

Dr. MICHELL CLARKE read a paper on **Two cases of removal of cyst from the lateral lobe of the cerebellum,** and showed one of the two patients. The surgical treatment had been carried out by Mr. R. G. P. Lansdown.

Mr. MUNRO SMITH read notes on **A case of ruptured middle meningeal artery—operation, recovery.** (For these notes see page 58.)

January 8th, 1908.

Dr. HENRY WALDO, President, in the Chair.

Dr. P. WATSON WILLIAMS showed a case of **Frontal Sinusitis** cured by operation, and another case in which the ethmoid cells had been removed and the spenoidal sinus curetted by external operation.

Dr. CHOWRY MUTHU read a paper on **Some clinical symptoms in the early stages of Pulmonary Tuberculosis.**

Mr. A. L. FLEMMING read notes on a **Case of Filariasis (F. Loa).** The patient was a man of 30, who had just returned to England after being six years in German West Africa. On the journey home he had been seized with very acute pain in back. Later a swelling gradually appeared in the erector spinæ muscle, on one side of the spine. The patient became very ill, and the swelling increased and was ultimately incised by Mr. Carwardine, and a small abscess found over the last rib. The Filaria Loa was found in the blood. Recovery was rapid after the operation.

Dr. WALTER SWAYNE read a paper on the operative treatment of **Pelvic Hæmatocele,** and showed, with Dr. Walker Hall, lantern slides of chorion-epithelioma.

February 12th, 1908.

Dr. HENRY WALDO, President, in the Chair.

Dr. P. WATSON WILLIAMS showed two patients who had been operated upon for **Malignant Disease of the Nose.** The first was a man who had had a swelling in the region of one frontal sinus. An incision had been made as for frontal sinusitis, and a sarcomatous growth exposed and removed. The growth had extended in the ethmoid bone, and a large part of the inner wall of the orbit had to be removed. No recurrence was noticeable at present, three months after operation. The second patient had had a polypoid mass, involving the septum of the nose, and extending back into the naso-pharynx. A large osteo-plastic flap had been turned down from the side of the nose, and good access thereby obtained to the interior of the nose, and the growth removed. The scarring was slight.

Professor WALKER HALL gave a demonstration, with lantern illustrations, upon some points in the **Pathology of Gastric and Duodenal Ulcers.**

Mr. CARWARDINE discussed the **Surgical Treatment of Gastric and Duodenal Ulcerations,** with lantern demonstrations. He **reported** eight **cases of acute perforation** of ulcers which he had operated upon, of which the last five had been successful. Also he **reported** upon fifteen consecutive **cases of gastro-jejunostomy** without a fatality.

Dr. NIXON read a paper on **Surgical Aid in Gastric and Duodenal Ulcer.** Ten cases were analysed, and the indications for and against operation formulated.

Mr. E. W. HEY GROVES discussed the **technique of gastro-enterostomy.** In doubtful cases of pyloric thickening, the speaker laid stress upon the advantages of first performing gastro-enterostomy, and a few weeks later again examining the thickened parts. If they were non-malignant they would be found much less thickened than at the time of the first exploration. Also the speaker had found, in one case, the operation of gastro-enterostomy facilitated by drawing up the parts to be sutured through a hole made in the anterior omentum.

Dr. MICHELL CLARKE discussed the indications for surgical interference in gastric and duodenal ulcers, and their diagnosis and medical treatment.—Drs. EDGEWORTH and SWAIN continued the discussion.

J. LACY FIRTH.

J. A. NIXON, *Hon. Sec.*

Local Medical Notes.

University College, Bristol.—Recent Examination Results — M.B. Oxford.—*Pathology:* B. A. W. Stone.

Conjoint Board.—*Biology:* W. Worger, A. G. Morris. *Pharmacy:* S. Marle, G. H. Piercy, P. S. Tomlinson. *Medicine:* R. G. Vaughan. *Midwifery:* F. S. Scott, H. H. Templeton, S. H. Kingston.

L.D.S.—*Chemistry:* S. Saxton.

Additional Demonstrators of Anatomy: W. H. A. Elliott, M.B., B.S.; C. B. Goulden, M.A., M.B., B.C. Cantab., F.R.C.S. Eng.

Dr. Fortescue-Brickdale has been appointed Director of the Public Health Laboratory of University College, Bristol.

University College Union.—The various societies and clubs of the College have recently amalgamated under the above name. An excellent athletic ground within reasonable distance of the College has been secured, and it is hoped will be ready for use shortly. The secretary of the Union will be pleased to give any further information regarding membership to any old students of the College who may be interested.

Medical Research Club.—The members of the Medical Research Club invited the medical practitioners of the district to meet Sir Almroth Wright on Friday, February 14th. After the usual club dinner, Sir Almroth addressed a representative audience upon the subject of "Vaccine Therapy." He pointed out that when antiseptics are applied to infected areas the antiseptic enters into combination with the tissues more easily than with the micro-organisms. Hence bacteria often flourish under antiseptic applications. The surgeon's knife was also cited as an ineffectual means of freeing the tissues from microbes; the production of active or passive hyperæmia and similar measures was only of limited utility. The chief aim must be to increase the natural resistance to infection by the injection of dead cultures of organisms isolated from the tissues, and by frequent determinations of the resisting power of the blood. The latter are of importance in the treatment of tuberculosis, and of conditions associated with the less common bacteria, because the individual reaction to vaccines varies considerably, and much harm can be done by empirical dosage. With staphylococcal infections, however, routine injections are permissible. Commencing with a dose of 50—100 millions, another injection of 100—250 millions may be made three days later. The patient generally feels better within twenty-four hours; the pain disappears, and the boil recedes. The dose is in such cases to be regulated by the clinical signs.

After some remarks on the necessity for preventing auto-

inoculation by preventing movements of the affected part during the treatment, Sir Almroth discussed the relation of the blood stream to the infected foci. It was imperative, he said, that the free, or incised, surfaces of any infected area should be frequently flushed with lymph, and with lymph possessing active bactericidal properties. For this purpose he recommended the internal use of citric acid, and the application of salt and sodium citrate to the external surface (sodium citrate 2 grains, sodium chloride 20 grains, boiled water 1 oz.), the former to lessen the coagulability of the blood, and the latter to promote osmosis.

Dealing next with mixed infections, the frequent association of streptococcus and staphylococcus with tubercle bacilli was instanced as an example of the need for double vaccines in some cases. In lupus, particularly, is it necessary to isolate the associated organisms. Here tuberculin frequently fails to procure resolution of the lesion until a coccal vaccine is added.

Bristol Royal Infirmary.—The following recent appointments have been made:—J. E. Shaw, M.B., has been appointed Hon. Consulting Physician. *Resident Obstetric Officer:* A. J. Wright, M.B., B.S. Lond. *Junior House Surgeon:* C. E. K. Herapath, M.R.C.S., L.R.C.P. *Casualty Officer:* C. G. Kemp, M.B., B.S. Durh., M.R.C.S., L.R.C.P.

Bristol Dispensary.—E. T. Glenny, M.B., B.S. Lond., L. N. Morris, M.R.C.S., J. H. Pinniger, M.B., B.S. Lond., F. G. Bergin, M.R.C.S., have been appointed Medical Officers to the institution.

Newport and Monmouthshire Hospital.—V. A. Crinks, M.R.C.S., L.R.C.P., has been appointed Honorary Surgeon.

Royal Territorial Medical Service.—There was a well-attended meeting of the profession held in the Medical Library on Friday, January 10th, to hear Colonel Russell, D.A.D.G. explain the medical aspect of Mr. Haldane's new scheme for the Territorial Forces. He traced in a comprehensive lecture the whole arrangements made for the disposition of the medical corps in war from the home hospitals, across the seas, through the base hospitals, lines of communication, the field hospitals and collecting stations up to the front, and elucidated his speech by plans and maps, and having done so, called especial attention to what was to be done in England from the end of March this year, when the Territorial Medical Service was to be equipped and made ready to take the place of the R.A.M.C., should the whole of the R.A.M.C. or a large portion of it be required for service abroad in case of war. The arrangements briefly are as follows. England, Scotland and Wales are divided into ten areas—" grouped regimental districts " —and each has to provide certain units—cavalry, artillery, engineers, infantry, army service corps and medical service. The area to which Bristol belongs is the 7th Regimental District, and it comprises the counties of Gloucestershire, Worcester,

Warwick, Oxford, Berks and Buckinghamshire. This area has to raise three field ambulances, one cavalry ambulance, and two general hospitals, and Bristol is asked to supply one of the field ambulances and one general hospital. There ought to be no great difficulty in this. The general hospital—only for use in time of war in England, *i.e.* on invasion—will necessitate a permanent staff of three officers—an administrator, a registrar and a quartermaster, and forty-three men, chiefly non-commissioned officers. The rest of the staff will consist of civil hospital physicians and surgeons and specialists, who will in time of war in England take on duties at the general hospital, which will be erected and equipped directly it is wanted. The Medical Faculty of University College was naturally the best committee to nominate the members of this medical and surgical staff, and names in the order of seniority for rank have been sent in by the Medical Faculty for the approval of the Director-General. The rates of remuneration are those of the regular army.

As regards the field ambulance, Colonel Russell addressed a public meeting at the Drill Hall on the following evening, and advocated the formation of such a unit in Bristol. The total number wanted is 250 of all ranks—ten officers, all mounted, one of whom, the quartermaster, need not be a medical man, and about sixteen sergeants and staff-sergeants. The great majority of the F.A. will belong to the bearer division, but there will be a large transport to be raised, and men accustomed to horses are wanted for this branch. It is hoped that by the end of March, when the Counties Association will be ready to take on and maintain the unit, a sufficient number of men will have promised to join to make its recognition by the War Office certain. We have reason to think there will be no difficulty about the officers willing to take a commission ; but should any of our readers who take a keen interest in the work like to join, we recommend them to apply to the authorities without delay. Bristol has heretofore had a very good record in being able to raise volunteer corps of all arms, and we hope that now, when the new body of men that will be so intimately associated with the medical profession is being recruited, we shall find Bristol will not allow her character for energy and loyalty to be called in question. It would be of great assistance if those members of the medical world who can influence the right kind of young men to come forward and join in this good work would not forget to recommend them—for the benefit of themselves, their country, and their King—to present themselves on any evening at the Rifle Drill Hall, and promise to enlist before the end of March. We hope to publish in our next number the names and ranks of those medical officers whose names have been submitted to the Director-General to commission, both on the general hospital staff and in the field ambulance.